

7-16

X B
.E775



LIBRARY OF
THE NEW YORK BOTANICAL GARDEN

BETTER FRUIT

VOLUME XVI

JULY, 1921

NUMBER 1

AF Columbia, 1921
JUL 21 1921
50 Pieces

Fifteen Years' Service to the
Fruit Industry of the Northwest

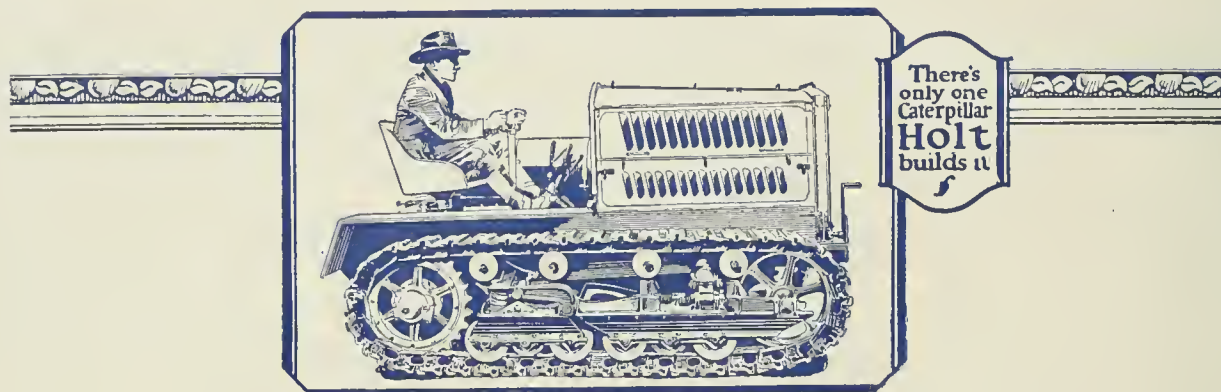


20 CENTS
THE SINGLE COPY

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON

Subscription \$1 per Year in the United States; Canada and Foreign, Including Postage, \$2. Payable in American Exchange

Finish your work on schedule time



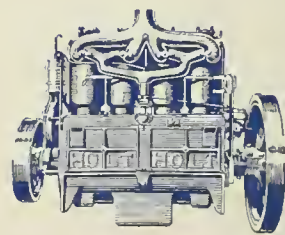
You can depend upon the "Caterpillar" Tractor to meet the work schedule that you lay down. It develops none of the ordinary tractor's weaknesses in the field.

This dependability makes systematic farming a habit with "Caterpillar" owners. And that is the most profitable kind of farming.

"Caterpillar" 5-ton Orchard Tractor, besides being dependable, has a record for lowest cost per operating hour—for economical use of fuel and oil.

It is built narrow and close to the ground—gets between, under and around the trees in a closely planted orchard without hitting limbs or fruit. It is short turning, easy handling and has three speeds, $1\frac{1}{2}$, 3 and $5\frac{3}{4}$ miles per hour. It has plenty of power for plowing and sub-soiling deeply.

Get full information about the "Caterpillar" 5-ton Orchard Tractor now—see the Holt representative in your neighborhood or write us.



Stationary Power Units

Built for the severe requirements of tractor service, it is especially adapted to economical operation of pumping plants and other farm work. It is a perfected motor of the valve-in-head type, in 30, 45, 55 and 75 horse-power ratings. Holt accuracy and dependability guarantee its service.

The Holt Manufacturing Company

Spokane, Washington

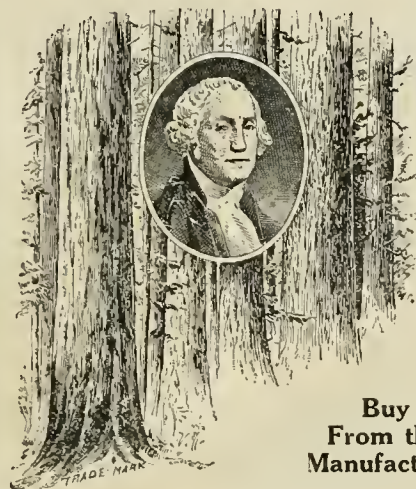
Stockton, California

Peoria, Illinois

San Francisco, Calif.

Los Angeles, Calif.

MAR 23 1922



Box and Crate Shooks

Buy
From the
Manufacturer

WE CARRY LARGE STOCKS OF DRY BOX LUMBER
AT ALL TIMES

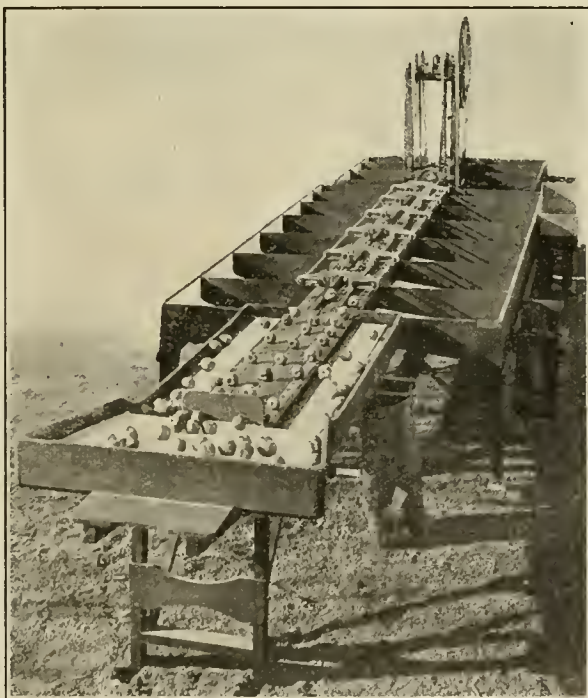
FACTORY CAPACITY, 150,000 FEET PER DAY

SHIPMENT OVER THREE TRANSCONTINENTAL LINES
N. P.; C. M. & ST. P.; and U. P. SYSTEMS

Grays Harbor Commercial Co.

COSMOPOLIS, WASHINGTON

2/2/64 Dept Columbia



Absolutely No Bruising of the Fruit by Using the Ideal Fruit Grader

It is built for two, three and four grades, and room for four, six, and eight sorters to work at one time. The machine can be adjusted while running in about one minute of time.

It is the most simple machine on the market, never gets out of order, as there are no complicated parts to get out of adjustment or break.

We have placed our new sorting table on this year's output which increases the amount of fruit that is packed per day.

It is noiseless in operation. Nothing to break, as the fruit is graded by coming in contact with elastic bands only.

We will be pleased to mail you our folders and prices of our several size machines upon application.

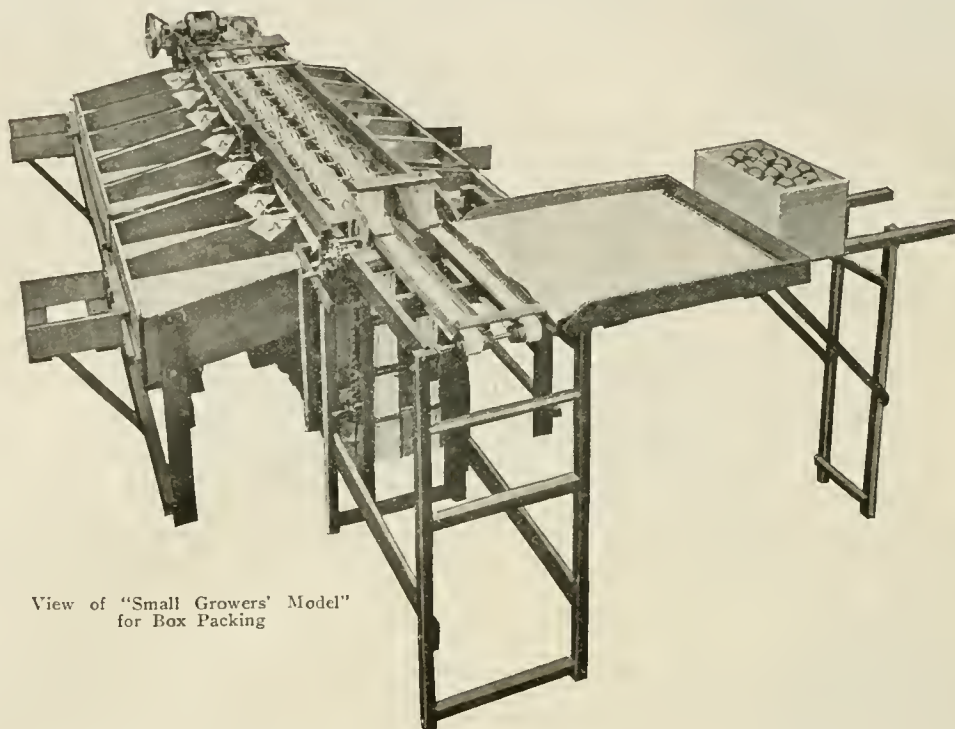
Our literature explains the working parts in detail, also shows several different views of the machine.

Ideal Fruit & Nursery Co.

HOOD RIVER, OREGON

A Cutler Fruit Grader

*For the Small Fruit Grower
For Box Packing*



View of "Small Growers' Model"
for Box Packing

To fill a demand for a smaller model than our Two Section Model for growers of small acreage, or who have only a limited floor-space for packing, we have designed the "Small Grower's Model" shown above. This model handles two grades of fruit with seven bins for each grade and is only seventeen feet in length over all. It can be operated in a minimum space of 14x20 feet. **THERE IS NO OTHER GRADER ON THE MARKET WHICH SO COMPLETELY FILLS THE REQUIREMENTS OF THE SMALL GROWER,** who with the help of his family can pack out his crop.

With a Cutler Grader you can handle your crop quicker and at the least cost of sorting, packing and handling. You do not have to depend on skilled packers. A Cutler Grader will soon pay for itself in the saving made in the handling of the crop.

*Eventually You Will Buy a Cutler Grader
Why Not Now?*

Fill out the coupon below and mail to us today. You may regret not doing so.

Cutler Manufacturing Co.

353 East Tenth Street, Portland, Oregon

Please send me descriptive circulars and prices of the equipment as indicated below.

Check the equipment you are interested in.

.....GraderOff grade return belt attachment
.....Box PressCull Separation attachment
.....Grip Trucks	

Crop expected in 1921.....boxes

Name

Address

Box Presses

See the Cutler Press before buying. We have the best press on the market today

Write Today for Catalog and Prices

Cutler Manufacturing Company

353 East Tenth Street

Portland, Oregon

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, JULY, 1921

NUMBER 1

Fifteen Years With the Fruit Growers

By Charles I. Moody of BETTER FRUIT

WHAT is the future of the box fruit industry in the Northwest? Could one but look ahead with prophetic eye, and see what is in store for us, he would be much sought after, for this question is the paramount one to all fruit growers.

Man will suffer much, will bear much, and will hold to the line when ultimate success is guaranteed, but it takes a big man of strong character to carry on in the face of disappointment and uncertainty. When good prices are promised it is not hard to apply every recommended spray, to cultivate and fertilize intensively, and to thin adequately, all for the production of fine and abundant fruit, which will return big profits. But the lean years. There's the rub. There is a general let down after one such, and when several follow one another, planting of new orchards ceases and care of bearing trees seems not worth while. Then comes the real test of one's faith in the future of one's chosen industry.

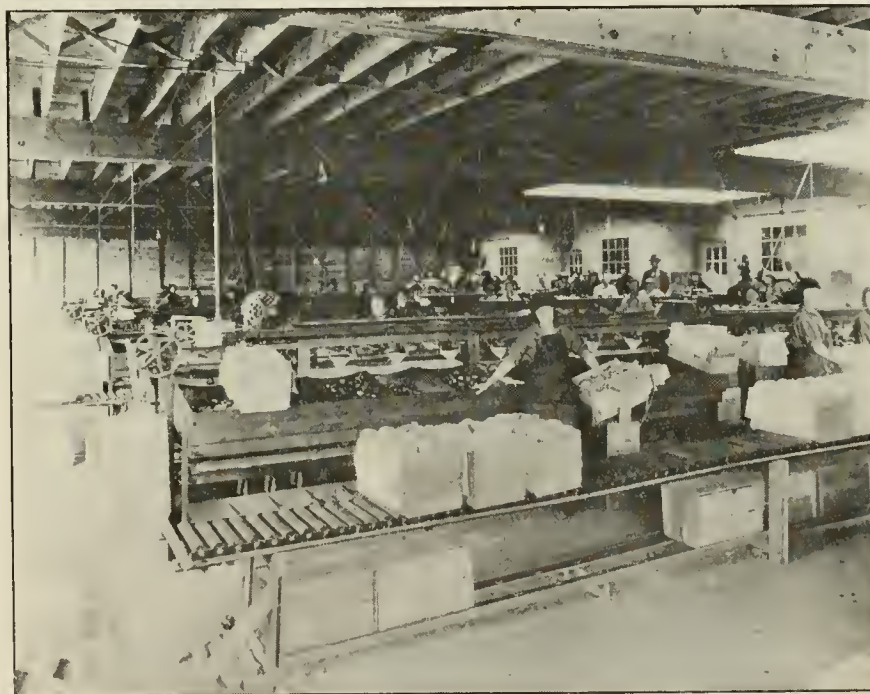
All this you may say is far from the subject of the title of this article, but the reverse is true, for the past and future of any industry are linked irrefutably. The future of today is tomorrow's past. A short resume of the past fifteen years, practically the life of our Northwest box fruit industry, may be of interest and profit in attempting to draw therefrom conclusions as to the future, which is the real concern of us all.

Many growers have pet theories on co-operative selling and buying,

on independent shipping, on the best way to assure proper distribution, and of course, how the sales manager *should* have sold last year's crop.

Unfortunately very few growers have any real comprehensive idea of the ramifications surrounding

ized for profit, and at the bottom of the fall of practically all, has been lack of confidence, not by any means always justified, but rather bred of ignorance of conditions on the part of the members. Probably the first growers' association was the original Hood River Fruit



Scene in typical apple packing-house showing four big, motor driven grading machines and practical application of gravity conveyor. This unit can turn out an average of 4000 boxes a day easily.

the disposition of several million boxes of fruit. This very ignorance of selling and market conditions (which too many association heads seem to foster in their members), is the rock-bound coast upon which the staunchest co-operative craft have come to grief.

During the past fifteen years there have risen and fallen dozens of marketing organizations throughout the Northwest, some purely co-operative, some organ-

Growers' Union, purely co-operative, formed about 1892 to handle only strawberries.

Since then, and particularly throughout the fifteen years just past, there have sprung up a multitude of marketing associations, most of them for, of and by the growers, with kaleidoscopic reorganizations of the same.

The first car lot shipment of packed and wrapped apples to leave the Northwest was shipped by the

Davidson Fruit Company from Hood River in 1898, to Scobel & Day, New York City, and was a solid car of Spitzenburgs.

Since then thousands of cars of fruit have followed that daring lead Eastward, even as thousands of sturdy sons, attracted by the wonders of the Northwest, have flowed in the opposite direction. In 1905 E. H. Shepherd, founder and owner of BETTER FRUIT until his death in 1916, was manager of the Hood River Apple Growers' Union.

In 1906 the millenium presumably had come to the fruit industry in the formation of the North-Western Fruit Exchange at Seattle. This organization was formed to whip into line every association in the Pacific Northwest, to act simply as a clearing house, or sales head for them. Each district association was to retain its individuality in everything but sales. Practically all of the marketing associations in the field went in, but during the next year dissension crept in, and the toboggan of secession commenced, which in a few years was the ruination of this first attempt at Northwest unity in marketing.

From then on, as new districts were opened up, thousands of acres

planted to trees, and the real development of the Northwest fruit industry fell into its stride, district associations were formed by the dozen.

The Yakima County Horticultural Union came into being, as the first growers' organization in Yakima. It was purely co-operative. In 1911, and again in 1917 it passed through reorganization. Today it is functioning as the Yakima Fruit Growers' Association, and is still co-operative.

Throughout the Rogue River, Willamette and Spokane Valleys, the Wenatchee and Puyallup districts, the Bitter Root valley in Montana, and the Boise, Payette and other districts in Idaho, the seed of some sort of co-operation in selling was germinating, fertilized by reports of the strength and success of the Citrus Growers' Association of California, perhaps the strongest association of its kind in the country.

In 1912 Hood River answered the call, when all local selling organizations and all independent shippers joined forces within the then existing Apple Growers' Union.

For four or five years this situation held, when dissention and mis-

understanding finally prevailed, and certain of the organizations and independents dropped out, leaving within the union approximately sixty-five per cent of the valley's tonnage. This organization is functioning today as the Hood River Apple Growers' Association, and is still co-operative.

In 1913 another effort was made for territorial unity, in the formation of the North Pacific Fruit Distributors, with head offices in Spokane, a purely co-operative organization for the marketing of Northwest fruits from all sections. It was recognized as the exclusive sales agent for the following districts: Yakima Valley Fruit Growers' Association, North Yakima, Washington; Apple Growers' Association, Hood River, Oregon; Idaho-Oregon Fruit Growers Association, Payette, Idaho; Walla Walla District Fruit Distributors, Walla Walla, Washington; Montana Fruit District, Hamilton, Montana; Spokane Fruit Growers' Company, Spokane, Washington; Central Idaho-Washington Fruit Growers' Association, Garfield, Washington; and the Wenatchee North Central Fruit Distributors, Wenatchee, Washington.

This apparently strong and ideal



The finished product—the consummation of years of eternally keeping at it, and holding one's faith in the ultimate outcome

combination came after many years of travail, and lasted until 1917.

The Oregon Growers' Co-operative Association was formed at Salem, Oregon in 1919, and has done much to unify the Willamette Valley fruit and berry growers. It also operates extensively at Medford, The Dalles and other points within the state.

There are many problems for us to solve today, and new ones will present themselves as our distribution broadens, as it surely will, to take in the rich and absorbent markets of South America and the Orient and the furthestmost countries of Europe.

The immensity of the Pacific Coast fruit industry today, with an annual production of more than 100,000 carloads, or approximately 57,000,000 boxes, is such that those in control of its movement are worthy of cultivation by our great public carriers, both rail and water.

When the Panama Canal, possibly the greatest monument in the world to American resourcefulness and brains, was nearing completion, our Northwest fruit growers were promised an economical and adequate transportation service to the Atlantic seaboard and England. Not until last year, however, was it ever even tried out commercially, when the Earl Fruit Company loaded 30,000 boxes of apples on the refrigerator ship Kinderdyck for London and Liverpool. Two other ships were loaded from the Northwest for foreign ports also. Instantly upon reports of the success of these shipments, however, it became the "big stick" raised against the railroads for the lowering of their rates. The railroads cannot afford to permit any considerable tonnage to go to the Canal, for they realize the difficulty in diverting it to themselves another year.

Already the North Pacific Coast Line has been formed, affording a joint service of the Royal Mail Steam Packet Company and the Holland-America Line. They offer a fast freight service between Pacific Coast ports and England, Holland and Germany, all their

steamers being equipped with refrigerators to handle fresh fruits and other perishable commodities in commercial quantities.

There are too many of our growers, unfortunately, who are deep in the rut of routine, too busy all day and too tired when night comes to do more than scan newspaper headlines and then tumble into bed. Day after day, they perform the round of seasonable tasks in a more or less mechanical way. They will tell you that they know how to prune, how to spray, how to thin, and have packed more apples than you have ever seen; that they used to read their fruit magazine and federal bulletins before they



Mr. Shepard was not only an able editor and entertaining companion, but he knew how to grow fine fruit as well.

learned it all, but not now. These wisecracks have lost absolutely the broad vision with which they entered the game, and are narrowed down to a hum-drum and deadly existence. There have been many lean years 'tis true, enough to try men's souls to the breaking point, but it's coming back, so let us awake to a future infinitely greater than the rosier era of the past, and come to some realization of the big things developing in our industry.

There are too many millions of dollars invested, too many big and able men in the game to permit of anything but progression. Last year our growers found many reasons besides the failure of their association to market wisely for low returns. High harvesting costs and

high prices of boxes and other materials, together with excessive freight rates, were held responsible.

There was another cause, however, and probably nearer the true cause than any of the others mentioned, though naturally they contributed. The annual report of one of our strongest marketing associations shows that of the entire tonnage handled by it in 1920 only 44 per cent was Extra Fancy, 36 per cent Fancy and 20 per cent C-Grade, whereas the averages for the three years previous were Extra Fancy 52 per cent, Fancy 32 per cent and C-Grade 16 per cent. The report shows further a decrease in the size of the fruit grown, as follows: 1920, 4-tier 40 per cent, 4½-tier 35 per cent, 5-tier 25 per cent. Averages for the three preceding years were: 4-tier 54 per cent, 4½-tier 30 per cent and 5-tier slightly over 16 per cent. With only 44 boxes Extra Fancy, out of 100 packed, and only 40 per cent of those, or 17.6 boxes of 4-tier, surely we can read the answer.

A let-up in spraying, failure to adequately thin, passing up the necessary feeding of the trees through fertilization and then, in natural sequence, a low grade crop of small fruit.

A preponderance of Extra Fancy fruit, of large size, such as we used to grow and still can, will always return a profit.

The struggle has been and still is for a perfect selling plan. Co-operation has, it is true, been much misused and abused, yet the success of the future marketing of fruits lies in true co-operative selling.

To too many people, however, co-operation is the act of some individual or association helping them solve their troubles but asking nothing in return, whereas true co-operation means work on the part of all concerned for a common end.

Let there be a franker understanding on the part of the members of our marketing associations of the countless hair-trigger decisions the sales manager is called upon to make, with an equal chance

(Concluded on page 21)

The Value of Thinning

By Clayton L. Long, Extension Horticulturist, Oregon Agricultural College

THINNING apples in the early summer will do more to increase the size and color of the fruit and the total value of the crop than any other operation supplementary to common orchard practices. It is also the most satisfactory as well as profitable way to prevent loss of branches from breakage on trees bearing full crops. Although it will not increase the vigor of the tree, it will be a very important factor in maintaining that which the tree already has.

The activity of an apple tree, whether for fruit-bud formation, fruit production or growth is controlled largely by the relationship of the raw food materials as furnished by its environment and utilized by itself. The soil furnishes the moisture and "soil foods" and the atmosphere furnishes the "air foods." If the rainfall is ample or irrigation practiced, the soil properly drained yet capable of holding moisture, and excessive evaporation prevented by proper cultivation or mulching, the soil moisture will not be the limiting factor. If these conditions are not right, and a uniform moisture supply is not available during the growing season, this is where our first attention is needed.

If the soil needs draining, this should come first and nothing else can take its place. If it will not retain enough water to mature the crop, organic matter should be incorporated and other means of increasing the water holding capacity of the soil practiced. If these corrections, together with prevention of evaporation from the surface soil, do not supply the tree with a sufficient supply of moisture, a condition often met in unirrigated, semi-arid sections, nothing can be done other than that of reducing the top of the tree by pruning to fit this shortage.

After this moisture supply is made to fit the tree or the tree to fit the moisture, our next step is to properly balance the two groups of foods, the soil foods and the air foods, to bring about such activity of the tree as is desired. If the soil is thin or worn out, which usually means low in organic matter, the soil foods may be the limiting factor and should be given next consideration. Annual application of nitrogen will be a temporary remedy, but the incorporation of organic matter, by plowing down straw, rough manure, cover crops, etc., are necessary in any long time solution of this soil problem. The nitrogen of the soil, which is the limiting factor in the group of soil foods, is carried in the organic matter of the soil and can be maintained only by

annual contributions of organic matter forming materials. The growing of catch crops should be an annual practice in cultivated orchards.

THE "air foods" are abundant in proportion to the area of leaf surface of the tree, together with the strength of the light playing upon this leaf surface. These foods may be the limiting factor where the soil is extremely fertile or the orchardist a heavy pruner or where a combination of the two exist. In this case the remedy would be a slowing up of the pruning, excepting a light thinning out in very dense trees, and a withdrawal of all nitrogenous fertilizers, manures and leguminous cover-crops. In other words let the tree accumulate a larger leaf surface and do not add nitrogen to the soil. This condition is seldom met in mature trees as their usual lack of vitality shows. Most mature trees would be more productive of profits if their vigor was considerably increased.

Thinning of the fruit becomes necessary whenever the activity of the tree is too largely consumed in the formation of fruit buds and the production of fruit at the expense of wood growth, a condition brought about by an over supply of air foods as compared to the soil foods. The young, vigorous tree comes into partial bearing, then into full bearing and finally over-bears before it is forced into the habit of alternate bearing. A tree that overbears is under-vigorous and carries a large number of very slow-growing fruit spurs that seldom bloom and when they do bloom never set fruit, another large number that bloom and bear and very few that are vigorous, making a good growth, that do not bloom.

Practically all apple trees that are consistent annual bearers have 25 per cent or more of their fruit spurs too vigorous each year to form fruit buds. This will insure enough vigor in the tree as a whole to make a good annual growth with a good number of new spurs forming fruit buds on the one year old wood. This condition cannot be brought about in over-bearing trees by thinning the fruit, no matter how severe the treatment. The trouble is more deeply seated than this year's crop of fruit. It is an unbalanced relationship of the "soil foods" and the "air foods" with the latter greatly predominating. This unbalanced condition may be of short or long standing, but continually growing worse as the natural tendency of the tree is to increase rather than to diminish it.

In fact this plight may become so extreme that the tree will get beyond this alternate bearing stage to a seldom bearing or even to a never bearing stage. Artificial means that tend to increase the "soil foods" and decrease the "air foods" must be used

and used strenuously. The natural tendency of the tree must be overcome, the unbalanced relationship of these two groups of foods must be rectified and the accumulation of the over-abundant "air foods" of previous years must be matched. The combined influence of pruning, fertilizing, cultivating and cover-cropping (or mulching), and thinning at their very best will be required to get this tree out of its alternate bearing habit back into the proper stage of vigor.

It will be a much harder task to get old trees out of their alternate bearing habit than it will be to keep young, vigorous trees from getting into it. In either case the tendency of the tree will have to be fought against annually.

THE effects of thinning may be a big factor in keeping young, vigorous trees from forming the alternate bearing habit, but it is not enough to get trees with the habit established back into annual bearing. It will help to conserve the vigor already there, but it will not instill new vitality into the tree. *The greatest benefit from thinning will be on this year's fruit.* It will pay big dividends on the increased size and color of the fruit and continue to pay for years to come on the branches saved from the breaking that so often takes place in heavily loaded trees. Time will be saved in the picking, grading and packing of the crop equal at least to that required for thinning.

The most economical time to do this thinning is immediately after the June drop, after nature has done her thinning. At this time most of the apples left will mature and one need not hesitate to do all necessary thinning at one time. It is far cheaper to remove all surplus fruit the first time over the trees, than it is to make two or more thinnings. In practice all imperfect fruit should be removed. Each cluster should be reduced to not more than one fruit and then enough others removed until those remaining are at a desirable distance apart. Variety as well as vigor of the tree should be considered in determining the right distance apart to leave the fruit. On vigorous trees the smaller varieties will net most if left six or seven inches apart while eight or ten is none too far for the large varieties. These distances should be increased an inch or two whenever the tree shows lack of vigor.

The time required to do this work will vary with the size of the tree, as well as set of fruit. Trees capable of bearing three or four boxes of marketable fruit will require about one-half hour, those equal to ten boxes in the neighborhood of one hour

(Concluded on page 16)

Transportation Problems of the West

By C. De Vere Fairchild of Yakima, Secretary Deciduous Bureau, Pacific Coast Producers' and Shippers' Association

MAINTEIN that Wenatchee, Yakima, Seattle—Washington, Oregon and California are merely the names of certain geographical locations and that the existence of these names should not in the slightest degree lessen our interest in each other. We are associates in the fullest sense of the word and actuated by this spirit of unity, we are going to successfully solve one of the most stupendous problems confronting the fruit grower and all other interests of the Pacific Coast—the efficient and economical transportation of western fruit to the markets of the world.

The capital invested in the fruit industry of the Pacific Coast is in excess of \$300,000,000, and the annual production exceeds 100,000 carloads, or approximately 57,000,000 boxes; consisting principally of apples, pears, oranges and lemons. These figures convey some idea of the magnitude of the problem of distribution and the importance of efficiency and economy in transportation. This is further exemplified in the statement that the mere saving of 10 cents a box means a total of \$5,700,000.

This tremendous industry is however still in its infancy, large areas suitable to the production of the highest quality of fruit can yet be brought under irrigation and for many years to come the grower can keep pace with an increased demand. The production of fruit on the Pacific Coast therefore for many years to come will be regulated by demand, and demand in turn is largely controlled by the cost and efficiency of transportation.

Apples shipped from the Pacific Northwest enjoy a wider distribution than any other commodity shipped from one section. In addition to the distribution to over 2,500 cities and towns in the United States a large export trade is being developed to Europe, Asia, Africa, Australasia, South America, Canada and Cuba and now that Mexico is showing signs of peaceful endeavor, possibly its sixteen million inhabitants can be persuaded to join the ranks of the consumers of western fruits.

WITH the exception of a few varieties, which constitute a negligible percentage of the total production, all of our apples with proper refrigeration facilities can be distributed to the markets of the world; some varieties require prompt shipment, other varieties can be held in cold storage for a period of seven months and then be safely transported to Europe. This makes possible a shipping season of eight months.

During the coming season we hope to make a shipment of 40,000 boxes of Bartlett pears from Seattle to England, and it is confidently expected that the condition of these pears upon arrival will permit of extended distribution.

The export trade presents unlimited possibilities; the installation of refrigeration on vessels engaged in general cargo traffic ample to meet the possibilities of the trade at port of entry and tributary territory will revolutionize this outlet for western fruit;

If the Pacific Coast is to realize the maximum benefits from the great fruit industry, which already represents a capital investment of more than \$300,000,000 in this section, closer co-operation between individuals, communities and states is necessary, in the opinion of C. de Vere Fairchild, Yakima grower, who was one of the Washington representatives at the recent Pacific Coast conference of fruit growers and shippers held in Seattle. At the conference the Pacific Coast Producers' and Shippers' Association was organized to provide water transportation from the Pacific to the Atlantic for thousands of tons of fruit which the railroads cannot now handle economically or efficiently.

in many centers it will increase consumption more than ten fold; in others, where western fruit is practically unknown today, a flourishing trade can be developed. To illustrate this statement, a friend of mine operating a newspaper in Toyko, some time ago wrote me as follows:

"I am satisfied that a large quantity of Pacific Coast pears could be disposed of among the upper class of Japanese provided you had some way of delivering the fruit here in perfect condition."

Hundreds of foreign markets that are capable of consuming tremendous quantities of western fruit are lying dormant waiting for American initiative to equip vessels with proper refrigeration so that western fruit may be delivered to the furthestmost corners of the earth with practically no deterioration in transit.

These statements of water transportation possibilities are based on the actual results of certain shipments from Seattle, the official report of which is as follows:

WASHINGTON, D. C., Feb. 4.—Considerable interest has been manifested in the results of the venture of Pacific Coast apple growers in shipping apples from points on the Pacific direct to Eng-

land via the Panama Canal. The American Agriculture Trade Commissioner at London reports that the fruit on both vessels arrived in excellent condition."

In speaking of this venture, the Department of Agriculture says the enterprise of the Pacific Coast Shippers is commendable in every respect. Most of the apples in the consignment were C grade because northwestern shippers were naturally somewhat cautious about placing their best apples in an experimental shipment. However, gratifying results obtained will encourage them to ship only the highest grade to the British markets in the future.

The fruit on the steamship Eemdyk reached Southampton in the latter part of November and went on sale the day after arrival. Deliveries were made throughout the United Kingdom within 24 hours, a notable achievement on the part of the auctioneers and the London & Southwestern Railway Company. A representative set of buyers from England and Scotland attended the sale, and many lots were disposed of.

The trade commissioner calls attention to the fact that in spite of the long trip there were less than 180 slight breakages in a shipment of over 30,000 boxes. These breakages were so slight that they were easily remedied by putting in a few extra nails. Though the prices received for this fruit at Southampton were less than the prevailing prices of the markets farther north, it must be remembered that the cargo contained a great deal of C grade fruit, which is an important factor in accounting for the low prices received.

THE fruit on the steamship *Kinderdyk*, which arrived in London on December 16, was also in excellent condition. The apples were most carefully stowed and were held in position with wooden dunnage nailed along the tops of the boxes. It was declared by a specialist in refrigeration and transportation of the United States Department of Agriculture, now in London, that the apple cargo of the *Kinderdyk* was intact, showing scarcely any evidence of shifting or breakage, and was in remarkably fine condition. Both the steamship company and the Pacific Coast loaders are to be congratulated on the success of these two shipments.

As stated in the preceding report, the success of these experimental shipments is due in large measure to the modern and efficient facilities which the citizens of King county have wisely provided, to the care and diligence of the dock authorities and steamship representatives, and reflect great credit to the officials connected with the Port of Seattle.

While the possibilities of export trade
(Continued on page 20)

The Honey Situation

By E. H. Tucker, Economic Statistician, First National Bank of Los Angeles and Los Angeles Trust & Savings Bank

IT IS ONLY recently that the honey industry has become a specialized important industry in the United States. This development has taken place almost entirely in the State of California and is to a great extent the result of the activity of co-operative marketing associations.

Heretofore, statistics as to honey production and consumption in the United States have been almost negligible, because of the fact that the production of honey was maintained as a side-line by the average agriculturist. The development of the honey industry upon a scientific commercial basis has created the necessity for accurate information as to honey production and for a careful scientific analysis of the honey situation.

California produces approximately 15 per cent of the honey produced in the United States of America. Iowa is the second state, producing 6 per cent of the entire crop of the United States. New York, Illinois, Michigan and Wisconsin each produce approximately 4 per cent, and Pennsylvania, Georgia, Florida, Ohio, Indiana, Missouri and Colorado 3 per cent. No other state produces more than 2 per cent of the entire honey supply of the United States.

California alone markets the major proportion of its honey production outside of the state in which it is produced. As a general rule from 70 per cent to 90 per cent of the commercial honey produced in California is marketed outside of the state and from one-third to one-half of the honey marketed outside of the state in which produced is California honey.

Careful estimates as to commercial honey production in California during the past 20 years are given below:

Year	Pounds
1900	2,208,000
1901	8,112,000
1902	5,125,000
1903	8,400,000
1904	1,040,000
1905	10,000,000
1906	4,510,000
1907	7,120,000
1908	4,524,000
1909	11,532,000
1910	4,080,000
1911	9,500,000
1912	4,710,000
1913	3,720,000
1914	7,950,000
1915	9,360,000
1916	8,100,000
1917	6,500,000

1918	5,500,000
1919	6,350,000
1920 (not final)	9,500,000

It is impossible to secure accurate figures as to total honey produced in the United States of America. However, the chief of the field service of the Department of Agriculture estimates that 180,000,000 pounds will approximate the total honey production in the United States during 1916, and states that it is his belief that these figures are within 10 per cent of the actual production. Upon this basis it is

three forms in which honey enters the commercial market. Next in importance to extracted honey is comb honey and there is a small amount of chunk honey sold upon the market. By chunk honey is meant that honey which is sold in the form in which it is taken from the hive, wax and honey being intermingled.

Practically all of the honey now produced in California is extracted honey. In 1916, 81 per cent of the California commercial production was sold in such form. In 1917, 82 per cent; in 1918, 90 per cent; in 1919, 97 per cent, and in 1920,



Excellent honey produced in the Northwest finds its source in such orchards as this

estimated that the total production for the United States was about 150,000,000 pounds in 1917, 180,000,000 pounds in 1918, 210,000,000 pounds in 1919 and 250,000,000 pounds in 1920. It may be, however that the 1920 production of honey in the United States totaled as much as 300,000,000 pounds. This is the estimate made by Dr. E. F. Phillip, epicultrist of the Bureau of Entomology.

COMMERCIAL honey is produced almost exclusively in the form of extracted, or bulk honey, although there are

96 per cent. In the United States approximately 55 per cent to 60 per cent of all honey produced is sold as extracted honey. Comb honey is relatively unimportant in California, production of such honey in 1920 amounting to only 2 per cent of the total amount of honey produced in the state. This is the result of the gradual change to extracted honey, as in 1916 approximately 18 per cent of California honey was sold as comb honey.

The production of comb honey is exceptionally difficult and its lasting qualities are such that it is hard to market comb

honey outside of the state in which it is produced. As a consequence, the bulk of the comb honey sold in the United States is that produced and sold locally in various Eastern states. In 1916 and 1917, 38 per cent of all the honey produced in the United States was produced in the form of comb honey. In 1918 the percentage was 31 per cent and in 1919 and 1920, 30.5 per cent.

Approximately 10 per cent of the honey produced in the United States is sold as chunk honey. In California only from one to two per cent of all honey produced is sold in this form.

The principal markets for honey moving through the regular channels of trade are reported as Medina, Ohio; Cincinnati, New York City, Chicago, Kansas City, Philadelphia and Boston. It is estimated, however, that approximately 90 per cent of the honey produced in the country, with the exception of the California production, does not get 25 miles from the home of the honey producer.

In the past the markets for commercially produced honey have been, to a great extent, foreign markets. In 1919 there were 9,105,362 pounds of honey exported from the United States. The principal importing countries were the United Kingdom, which imported 2,882,951 pounds; France, which imported 1,129,704 pounds; Sweden, which imported 1,128,152 pounds; Belgium, which imported 922,008 pounds; The Netherlands, which imported 690,595 pounds; Denmark, which imported 417,492 pounds; and Canada, which imported 297,414 pounds. While these exportations to foreign countries during 1919 were slightly larger than normal exportations, because of the sugar shortage, they may nevertheless be taken as indicative of the proportion of American produced honey formerly absorbed by foreign markets.

At present, these markets are being definitely closed to United States honey producers. In 1920 there were only 1,539,725 pounds of honey exported from the United States of America, almost 50 per cent less than total exportations to Great Britain during 1919 and approximately 83 per cent less than total exportations during 1919.

Several factors are closing these foreign markets to American honey producers. The first of these is the depreciation in foreign exchanges, which is making it exceptionally difficult for foreign countries to purchase American produced goods. This situation may be only temporary and the organization of the new \$100,000,000 Foreign Trade Financing Corporation may materially assist in stabilizing exchanges.

The other factor which is closing foreign markets to American productions is probably permanent. Throughout the world, companies are being formed to further honey production. Cheap labor costs, and inferior

methods in handling honey will probably assure these corporations a comparative monopoly on foreign honey markets.

The situation is made doubly serious by the fact that many of these companies are formed with the express purpose of exploiting United States markets. They are shipping quantities of extracted honey into the New York market. This honey, it is alleged, is sometimes shipped into the United States in containers, consisting of previously used casks, barrels, and even five gallon oil cans. This imported honey is not always produced under sanitary conditions and may even contain bacilli larvae, which are germs of a very contagious disease, similar in seriousness to the boll weevil in the cotton industry. Consequently, efforts are being made to secure an emergency protective tariff of not less than 5 cents per pound upon every pound of honey imported into the United States from foreign markets. The purpose of this tariff is not only

NOTICE NURSERYMEN

Nursery licenses expire June 30th. The law requires renewals each year, July 1st, by payment of the annual license fee of \$5.00 and filing a bond in the sum of \$1,000.00. Only surety company bonds will be accepted by the Director of Agriculture. Nursery agents' licenses must also be renewed July 1st. The fee for each agent's license is \$1.00.

to protect United States honey from competition with foreign honey, but is also to protect the honey industry from possible inroads which these larvae might make upon the bee of the United States, if importation is permitted to continue. A movement to require rigid inspection of imported honey and rejection of any honey containing injurious larvae could do much to correct this evil, but present attempts by producers seem to be directed toward efforts to secure tariff protection.

The United States honey industry is today definitely faced with the fact that it must rely almost entirely upon domestic markets in the future. In the past it has been the custom to market domestically produced honey in five-gallon cans, containing sixty pounds of extracted honey. As a general rule two of these cans form a case. A considerable proportion of this honey was retailed direct from the can into containers belonging to the consumers.

The baking trade in the United States has used large proportions of the United States produced honey in preference to sugar, because it permits the holding of a certain proportion of moisture in baked goods. As commercial baked goods tend to dry and chip easily if sugar is used, honey is considered superior for sweetening purposes.

IN ORDER to better exploit local markets a new means of marketing honey is fast gaining in favor in the United States and is being pushed by co-operative honey associa-

tions in California. Honey is being put up for the retail trade in one pound, two and a half pounds, five-pound and ten-pound friction-top cans, and in eight-ounce and sixteen-ounce glasses. These containers carry a label showing the name of the canning company and the source of the honey, so that its cleanliness can be vouched for. Active steps are being taken to develop larger home markets for this new form of honey. The food value of honey is unquestioned, as it contains 1485 heat calories per pound.

High railroad freight rates are interfering with the marketing of California produced honey, and active steps are being taken to secure a reduction in these rates so that California honey can enter the Eastern markets of the United States. With the development of water transportation, through the Panama Canal, it is anticipated that increasing amounts of California honey can enter Eastern markets at cheaper transportation costs. It is being found that co-operative marketing of honey, as at present carried on in California, is reducing the cost of marketing honey by several cents per pound, thereby assisting in profitable marketing. The California Honey Producers' Co-operative Exchange, with head offices in Los Angeles, markets the honey of approximately 85 per cent of the California commercial producers.

The problems which the honey industry of the United States, and particularly of California, are faced today are, therefore, three-fold. The first is the securing of an effective means of excluding any infected foreign honey, the second is a reduction in freight rates to Eastern markets, the third is the preparation of honey in more marketable forms and the development of larger consumption in the United States. The first of these problems will require Congressional action. The solution of the second will be made easier through the development of water transportation through the Panama Canal and the ready response which is being made in retail markets to the new forms of marketing honey will go a long way in solving the third problem.

Honey prices have dropped materially in the past year, because of general readjustment and because of the closing of foreign markets. While in 1918 and 1919 and the earlier part of 1920 the prices for the better grades of California honey in Los Angeles markets ranged between 18 cents and 23 cents. These prices have now dropped to as low as 12 cents and 13 cents. Predictions as to future honey prices can not be made with any accuracy today, but indications are that with the development of new domestic markets the excess honey formerly shipped to foreign countries will tend to be absorbed in the United States.

A poor spraying equipment makes control difficult. No more spray rods or guns should be used than the outfit will support and still maintain a good reserve without overtaxing the engine or pump.

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
LOS ANGELES HARBOR

LONDON—LIVERPOOL—HULL—ROTTERDAM—AMSTERDAM—ANTWERP—
HAMBURG and HAVRE

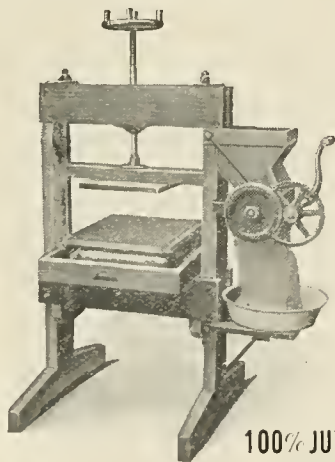
From Pacific Coast Ports	Loading	From Europe	Loading
M. S. SOMERSETSHIRE.....	Late July	S. S. MOERDYK.....	Early August
S. S. KINDERDYK.....	Early August	S. S. NOORDERDYK.....	Early August
S. S. MOERDYK.....	Late August	S. S. EEMDYK.....	Late August
S. S. NOORDERDYK.....	Late September		
S. S. EEMDYK.....	Early October		

**All Steamers Equipped with Large Coolrooms and Refrigerators for the
Transportation of Fish, Fruit, Cheese and Other Perishable Cargo**

For freight rates and space apply:

Oregon-Pacific Co., 203 Wilcox Bldg., Portland, Oregon—Main 4565

Orchard Queen Cider Mill



100% JUICE

It doesn't crush the apples, but grates or grinds them, breaking the juice cells so that when the pomace is pressed in the sanitary cloth sacks, all of the juice is extracted.

Orchard Queen is the simplest, easiest operated, cleanliest and most efficient of cider mills. No metal in cylinder or hopper to discolor juice. Operated by hand or power. Made in two sizes. Our folder explains in detail the construction and operation of the Orchard Queen Mill. Write for it.

**Puffer-Hubbard
Manufacturing Co.**

3203 East 26th St. Minneapolis, Minn.

F.C. Stettler Mfg Co.
Portland — Oregon

Lithographers
Color Printers
Labels
Cartons
Folding Boxes
Cut Outs
Display Cards
Special Advertising
Stiff Boxes Plain and Fancy

“Decision Day”

By J. S. Crutchfield, President American Fruit Growers, Inc.

THE general business situation is characterized by the lack of any distinct character. In other words, the country, and probably the world, has perhaps now reached the extreme height or depth of unsettlement. If this be the case, and we believe it is a fact, it means, speaking in basic terms, that conditions are ripe for a distinct and healthy restoration of confidence in business. All that is lacking at the present time is definite leadership and a decision day. When general business has stopped as still as it now has in many lines, it requires concerted action, under competent direction, to make the initial start.

A very pertinent question is: Have we reached the time when the word “Go” should be given? In other words, should July 15 next, be “Decision Day,” when the secretary of commerce, representing the administration, shall give the “Go” sign to all commerce and industry?

Most assuredly no earlier date than July 1 would have been opportune, and it might even be better to defer the date for this “all-together effort” until August 1 or September 1.

It is hard to imagine how fundamental conditions in the United States could be better than at present.

The present acute depression is artificial, unnatural and unnecessary. In our opinion, any such acute depression is wholly due to the unwillingness of the human factors in the rank of both capital and labor to recognize and bow to the inevitable.

Economic forces are actively in operation which refuse to follow the direction or ideas of either the captains of industry, the leaders of labor unions, or even the dictates of governments, unless such dictates conform to such natural laws.

The three big lines which make for normal volume of business are:

1. The approaching harvest of a crop produced at post-war costs, and which should, and undoubtedly can be sold at a net profit to the farmer.
2. The great building needs of the nation.
3. The vast and immediate needs of the railroads, in anticipation of a resumption of normal traffic.

Only such a crisis as the past year could have forced the farmers of the nation to get their production costs down in connection with the present maturing crops.

It would be a tremendous misfortune for the coming generation if an extensive nation-wide building boom should have taken place on the basis of the inflated costs of material, transportation and labor, heretofore, and even now, prevailing.

It would be nothing short of a calamity for the impoverished railroads to have been forced into the market for extensive im-



TO GUARANTEE best results in dusting use “Calispray” Dusts made in our own factory for the American Beauty Dust Sprayer—a brand, ready prepared, for every insect pest.

In Difficult Places

Convenience in the use of any sprayer is determined by the ease with which inaccessible places may be treated. The American Beauty Dust Sprayer forces its strong blast to the very center of the tree, dusting the underside of leaves and penetrating the blossom cluster—good breeding places for pests but seldom treated with the average sprayer.

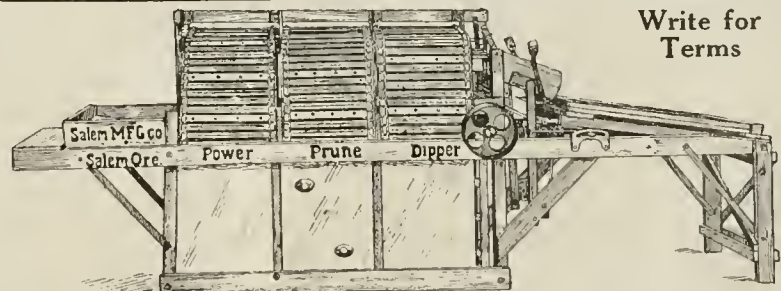
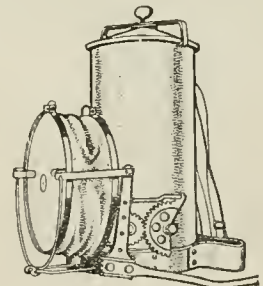
Being a hand machine the operator can go into most difficult places, treating the infested plant with greatest convenience. One man can dust 15 acres a day in orchard work, and in fields or vineyards the acreage covered is, of course, much greater.

Dusting with an American Beauty Dust Sprayer and “Calispray” Dusts is a method unequalled in the control of Aphis, Thrips, Mildew, Red Spider, Leaf Hopper and other pests.

Through dealers or direct from us.

The California Sprayer Co.

6001-11 Pasadena Avenue
Los Angeles, California
624 N. Sixth Street
Walla Walla, Washington



Write for Terms

E
F
F
I
C
I
E
N
C
Y

POWER PRUNE DIPPERS AND TRAYERS

We make the best. Write for our catalogue. This is the dipper demonstrated at the State Fair at Salem last season. Order now while we have the supply.

SALEM MFG. CO., Salem, Oregon

Factory located at 1396 North Front and Hood Streets

provements and extensions at the rate of wages and cost of steel and other material.

The great American business machine came to a stand-still while the major adjustment was being made; and it is perfectly obvious and gratifying to know that it will be impossible to make any substantial start on the major recovery unless it be on a right, sound and permanent basis of price of materials, transportation and labor.

July 15 is a possible "decision day" provided the railroads are willing on that date, simultaneously, to put into effect permanent or emergency rates on agricultural products, building materials, road materials, coal and similar heavy lines which go into the matter of the nation's food and building needs.

These freight rates were, on September 1, 1920, simultaneously raised 25 per cent to 40 per cent. The nation's business is so closely related that the present program of "nibbling" at one rate after another, and to such an inadequate degree except where water transportation is forcing adequate reductions, obviously does not meet the need of the situation.

The decreased rates must be put into effect simultaneously, at least on the above lines, in order to make possible the necessary simultaneous stimulation which is needed to get business really started promptly.

Steel and material of all kinds for building and railroads' construction, which are materially above a pre-war price, must also put in emergency prices for a while, and simultaneously, if they would have general business resume without further unnecessary sacrifice; and labor, on the same date, must be willing, for the time being at least, to accept such a wage as the traffic will bear.

The question of profit, on the first few months' business is immaterial. The farmer produced a whole crop last year at a tremendous loss below the cost of production. No corresponding sacrifice will be required from labor or from other lines of business, if concerted action and co-operation can be secured on July 15, August 1, or September 1—whichever day is determined upon as "Decision Day."

It is unreasonable to force 60 per cent of the nation's traffic to do what has been done during the past few months, namely, pay to the railroads a higher gross and net income than 110 per cent traffic produced in gross and net income one year ago.

On July 1 the railroads received a distinct and material decrease in their labor costs and improvement in the classification and rules affecting the employment of labor. This succor having been afforded by the government's action through the labor board, it is perfectly right that the government should insist that either permanent or emergency freight rates should be put into operation; and these freight rates, in the above lines, should approximate the basis ob-

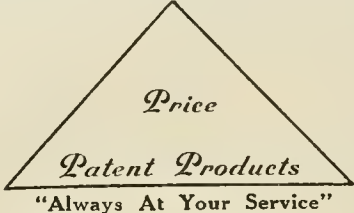
(Concluded on page 13)

Water Instead of Ice!



This process of cooling by evaporation is recommended by the United States Department of Agriculture, and is being used successfully in thousands of homes. The Empire Iceless Refrigerator will save your food from spoiling through the hot summer months, and there is absolutely no expense attached to its use. Made also in windlass type for use in wells, etc. It is a proven success, and is guaranteed to do the work. Let us send you descriptive folder and prices.

Farm Supply Company
281 12th St. Portland, Ore.



Price
Patent Products
"Always At Your Service"

Growers' and Packers' Equipment

We Manufacture:

	LADDERS
	BOX PRESSES
	PACKING CHAIRS
	BOX-MAKING BENCHES and
	AUTOMATIC ELEVATORS all
	GRAVITY & POWER CONVEYOR kinds
	POTATO GRADERS AND SIZERS of
	PRICE FRUIT SORTERS AND SIZERS Special
	NELSON FRUIT SORTERS AND SIZERS Equipment

PRICE "PRICE PRODUCTS"

Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse.

Illustrated Booklets and Price List on Request

Fruit Appliance Company

Successors to

Price Manufacturing Company, Inc.

YAKIMA, WASHINGTON

Marketing Conference

ELIMINATION of wastes in assembling and warehousing fruits at shipping points, amalgamation of existing co-operative associations, financing of the industry, principles of fruit marketing, evils of the present system of handling fruit and other national problems will be considered at the Western Fruit Marketing Conference to be held in the rooms of the Chamber of Commerce at Portland, July 11, 12 and 13.

The committee in charge of the conference consists of H. L. Hull, Yakima, chairman; Dr. S. B. Nelson, Washington State College, Pullman, Wash., and A. G. Craig, East Farms, Wash.

The program, which is sponsored by the state farm bureaus of Oregon, Washington, California, Montana, Idaho and Utah, will include the following addresses:

Water Transportation—C. De Vere Fairchild of Yakima, secretary deciduous bureau, Pacific Coast Producers' & Shippers' Association.

Fundamental Principles of Fruit Marketing—Dr. Hector McPherson, Corvallis, director farm markets.

History and Evils of Present Fruit Market System—Colonel Weinstock, San Francisco.

National Marketing Problems—Samuel Adams, Chicago, editor *American Fruit Grower*.

Principles of Marketing Systems—W. S. Shearer, Lewiston, Idaho, president Idaho Farm Bureau Federation.

Advertising Plans—C. I. Lewis, Salem, assistant manager Oregon Co-operative Growers' Association.

Elimination of Wastes in Assembling and Warehousing Fruit at Shipping Points—Ed Pierce of Opportunity, Wash., manager of Spokane Valley Growers' Union.

Refrigeration—R. R. Railthorp of Spokane, gov-

ernment specialist in fruit storage and railway transportation.

Loading and Supervision of Cars in Transit—W. J. Urquehart of Yakima, Wash., manager Yakima Valley Traffic & Credit Association.

Storage at Points of Origin and Destination—F. W. Graham of Seattle, western immigration and industrial agent, Great Northern railway.

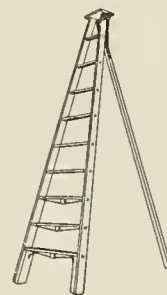
Increasing Efficiency of Distributing Points—C. H. Swigart of Yakima, manager Yakima Fruit Growers' Association.

Amalgamation of Existing Co-operative Marketing Associations and Organizations of Additional Units—George A. Mansfield of Medford, president of Oregon State Farm Bureau.

Financing the Growers and Acceptance of Fruit Paper by Local and Federal Reserve Banks—F. A. Duncan, Yakima, Wash., president Yakima National Bank.

The Future of Co-operative Marketing—E. A. Bryan, Boise, Idaho, state commissioner of education.

Necessity for an Annual Western Fruit Marketing Conference—Ward M. Sachett, Hamilton, Mont., manager Montana Fruit Distributors.



Northwest Orchard Ladders

"The Quality Line"

For Sale by **Leading Dealers Everywhere**

Northwest Fence and Wire Works

PORTLAND, OREGON

"Decision Day"

(Continued from page 12)

taining before the advance of September 1, 1920.

It is unnatural and undesirable to expect business conditions to be very stable the next few years. Hence the need in all phases of business is sufficient elasticity and adaptability to meet the varying trade currents.

Foreign developments, as well as the final outcome of the crops, are always important, but uncertain, determining factors.

If the nation should again enter a period of great prosperity, which is possible, the railroads should be allowed immediately to participate in such prosperity—certainly until they fully recover and are able to supply the increasing needs for transportation of any such prosperity.

The administration's ability to successfully cope with the foreign situation, and gradually institute such improvements as will approach the extreme needs of our own and foreign nations, is unquestioned.

No nation could have more reason to be optimistic than the American nation has today; a world in great need of our products and our financial assistance, on the one hand, and our abundant supply of both products and money with which to respond to such needs, on the other hand.

Labels

that
EXEMPLIFY
the
QUALITY
of your
GOODS

49th. Year of **Schmidt** Quality and Service
LITHO. CO.

SAN FRANCISCO LOS ANGELES
PORTLAND SEATTLE FRESNO
HONOLULU MANILA SACRAMENTO

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

W. H. WALTON.....Editor
JERROLD OWEN.....Associate Editor
C. I. MOODY.....Advertising Manager
EDWIN C. WILLIAMS.....
.....San Francisco Representative, Hobart Bldg.

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tucson.
MONTANA—H. Thorner, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

Fifteen Years

With this issue of BETTER FRUIT is begun its sixteenth year of service to the fruit grower of the Pacific Northwest. Through years of discouragement, when the fruit industry truly was in its infancy in this section of America, BETTER FRUIT continued the counsellor and friend of every grower.

"Service!" That has been the watchword of BETTER FRUIT. Only through service to the grower has the publication of such a magazine been justified. For the future we have pretentious plans. We hope to extend our scope and influence, to concentrate in our columns not only the technical horticultural developments in fruit growing but the solution of marketing problems and other difficulties facing the industry.

To our friends of many years, we express our cordial appreciation of their loyalty and pledge ourselves to greater service in the future.

Water Transportation

That the real solution of transportation difficulties for fruit-growers of the Pacific Coast lies in the development of the water routes to the Atlantic seaboard and Europe is the belief of many well-

informed observers who have the welfare of the industry at heart.

Even with the reduction in freight rates about which so much has been said and so little materialized as yet, the costs of transportation are far from the pre-war level which must be approached if the growers are to receive a fair profit on their product. If, with lower rates, steamship lines are able to deliver Pacific Coast fruit in good condition to Eastern distributing centers, they are certain to get a heavy volume of business.

It is not altogether a question of rates. It is a question of facilities, as well. Shortage of cars contributes greatly to the difficulties of the shipper endeavoring to move his fruit from the West. It must be remembered that all freight cars are not adaptable to the transportation of fruit. And that there is a distinct shortage in refrigerated cars is admitted by all the railroads.

Plans to provide excellent refrigeration facilities on steamship lines plying to the Atlantic coast, Asia and Europe insure their use to a large extent by the fruit growers.

An important step in the solving of transportation difficulties was taken in Seattle last month when the Pacific Coast Producers and Shippers Association was formed. Six thousand carloads of fruit from California and 4000 to 5000 from the Pacific Northwest were promised representatives of steamship lines at the organization meeting.

The aim of the new association, we are told, is "to encourage the shipping of fruit by water to Gulf and Atlantic Coast ports as well as to Europe and the Orient, and to endeavor to obtain better general service in delivering Pacific Coast fruit to eastern markets through water transportation."

BETTER FRUIT has no quarrel with the railroads. The rail lines have faced tremendous problems of readjustment and their burdens are heavy. BETTER FRUIT can recall that co-operation of the railroads has been of vital assistance in the development of the fruit industry in the West. But the railroads are not meeting the situation today,

likely through no fault of their own.

We believe that the provision of adequate water transportation for fruit will be of great importance to the industry if the West, which is growing so fast that future years will require the utmost facilities of combined rail and water routes to move the crops.

The Outlook

The increase in freight rates, high production costs, a general curtailment in buying and the deflation program have all had their influence in making the past season for deciduous fruits not as profitable as preceding seasons, yet in many respects the fruitgrowers of the Northwest are in much better condition financially than those of most other sections of the country. This is especially the case in regard to the box apple industry which, although far from being as satisfactory as growers and shippers would wish will wind up in much better shape than that of the citrus growers, who have had to take a loss instead of making a small margin of profit or at least breaking even.

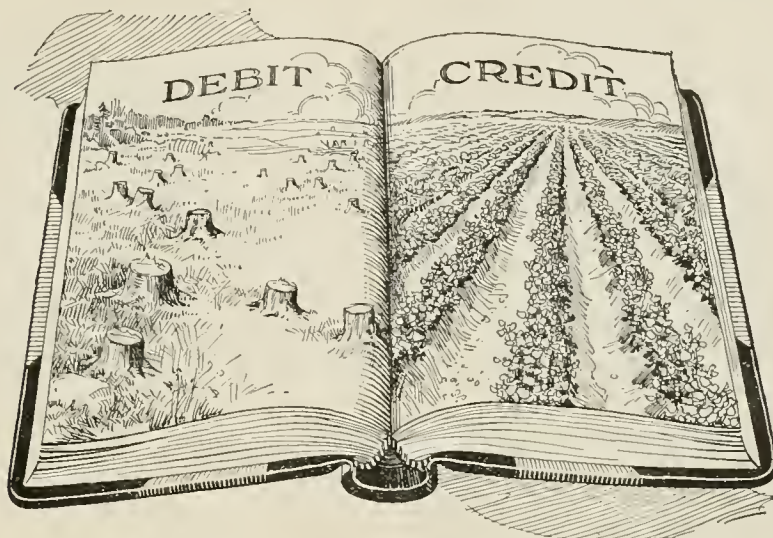
Indications now are that the coming season will be more favorable. So far, weather conditions have been admirable for a good crop of all fruits in addition to the fact that producing costs along most lines are coming down. The price of boxes compared to last year has declined very materially, while labor and other costs show a tendency toward a sharp decline. Authentic reports on the outlook for improved business conditions in the near future, and efforts toward a widening of the export trade for American commodities of all descriptions lead to the belief that the coming year should result in a much more successful outcome for the fruit industry generally.

THE United States apple crop this year is estimated at 107,698,000 bushels as against 240,442,000 bushels in 1920. A much greater proportion of the total will originate in the Northwest this year, however, as the big producing states of the east and south have suffered severe frost damage, and besides they would naturally expect a lighter crop following their heavy one of last year.

Water Shipment of Fruit

ON June 1 delegates from the fruit districts of California, Oregon and Washington held a convention in Seattle and organized the Pacific Coast Producers' and Shippers' Association. C. S. Whitcomb, vice-president of the California Fruit Growers' Exchange, was elected president of the association. The object of the new association is to encourage the shipping of fruit by water to Gulf and Atlantic Coast ports, as well as to Europe and the Orient, and to endeavor to secure better general service in delivering Pacific Coast fruit to Eastern markets through water transportation. At the meeting steamship companies were assured that for this season the association would guarantee 6,000 cars from California and 4,000 from the Pacific Northwest.

The new association has two branches, the citrus for California interests and deciduous for shippers and growers of fruit in the Pacific Northwest. J. H. Wade of Wenatchee was elected president of the deciduous fruit branch; C. DeVere Fairchild of Yakima, secretary and treasurer. Directors at large, C. L. Lewis of Salem and H. F. Davidson of Hood River. The shipments of fruit will be largely from the ports of Seattle, Tacoma, Portland and San Francisco. Steamship companies have indicated their willingness to equip vessels with cold storage facilities for handling shipments of fruit.



Put YOUR Waste Acres on the Right Side of the Ledger

TAKE an "account of stock" of your land. See how much of it is in debt to you—idle, croplless acres cutting down your income and reducing the profits of your labor. Clear this land of stumps. Turn your idle acreage into product-bearing fields adding dollars to your yearly income.

Clear land by the modern means—use



STUMPING POWDERS Du Pont and Repauno Brands

Experiments and actual operations in this section of the country have proved the true economy of Du Pont Stumping Powders. In some cases a saving of 50% in time and labor has resulted by using the easier and quicker dynamite method.

The constant supervision under which Du Pont and Repauno Stumping Powders are manufactured make them the most efficient and most uniform powders on the market today.

Send for "Development of Logged-off Lands", telling how to use dynamite for land-clearing, ditching and tree-planting.

E. I. DU PONT DE NEMOURS & CO., Inc.

Unequal Readjustment

IN a recent tabulation by Herbert Hoover, secretary of commerce, a graphic illustration was given of the unequal progress in the various steps in economic readjustment. It showed the danger of the agricultural industry and its standards of living being undermined. The following index numbers show present heights—100 being 1913:

Farm crop prices, 115; farm meat animals, 123; wholesale index, all commodities, 162; building materials, 212; house furnishings, 275; clothing, 192; fuel and light, 207; railway rates, 166; building-trade wages (skilled), 177.

Pond Products

(Nation-Wide Distribution)

With the exception of the sizing machine, no horticultural invention of modern times has so reduced the cost and improved the quality of output of our orchards as the POND PROP-HOOKS, POND SCREW-EYE and POND "CENTIPEDE" LADDER. No fruit grower can afford to be without these devices. Descriptive circulars and prices on request.

Russell G. Pond

(Forest Engineer)
INVENTOR AND SHIPPER
Parkdale, Hood River Valley, Oregon

ARE YOU BUILDING A DRYER?

Don't Waste Money! Buy the FIEBER AIR HEATER
Requires no piping—Eliminates fire dangers—Uses little wood—
Increases the capacity of your dryer.

THREE YEARS IN PUBLIC OPERATION
For Particulars, Write to

W. W. ROSEBRAUGH CO.
SALEM, OREGON

Standardization Improves Berry Pack

BASED upon reports from Inspector Bot-
tel, County Horticultural Commis-
sioner H. J. Ryan, of Los Angeles, has the
following to remark on the value of stand-
ardization as affecting the southern berry
pack:

"The method employed this season of
preparing strawberries for market and ship-
ment unpacked or loose packed is meeting
with great favor by growers, shippers, deal-
ers, retailers, and consumers. It does away
with the incentive for deceptive packing
and at the same time permits of full com-
pliance with the fresh fruit and vegetable
standardization laws.

"The grower is fully convinced that it is
to his interest to grade the berries, and the
consumer feels that he can now buy with a
fair assurance of getting a full box of good
fruit. The shippers are agreed that loose
packed berries carry to distant markets in
much better condition than when placed
compactly. The dealer and retailer can now
offer berries in three grades—No. 1 consist-
ing of mature, well-colored, well-picked
berries, uniform in size, of fine quality,
free from all defects and averaging about
one inch in diameter. The No. 2 berries are
of about the same quality as No. 1, except
that they will average about three-fourths
inch in diameter. No. 3 grade consists of
small berries of fair quality."

Picking Raspberries

RASPBERRIES should be picked just as
soon as they will come off the core
without crumbling in the picking. Place the
first two fingers and the thumb behind the
berry and gently pull it off without much
pressure. Do not hold many berries in the
hand at one time or they will be crushed
and be spoiled for shipping. Also do not
put over-ripe berries in the same box with
good, solid ones, or they will not ship well.
A soft berry soon molds and spoils the
whole crate. Fill the boxes full, but do
not round or heap up in the center or the
cover will crush them. Be careful not to
allow the sun to shine on the berries any
more than possible after they are picked.

The Value of Thinning

(Continued from page 6)

and those of fifteen to twenty boxes ca-
pacity will require from one and one-half
to two hours each. In removing the fruit
the hand is much more rapid than thinning
shears and should be used with all varieties
excepting the very short stemmed ones and
those clinging very tenaciously to the spurs.
Of all orchard practices that tend to in-
crease the size and color of the fruit, thin-
ning is the only one under the complete
control of the grower. It is sure to increase
the value of the crop with the least drain
upon the tree.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.

COPPER CANS



TUBING per foot. 1/4-inch, 20c;
3/8-in. 25c; 1/2-in. 35c; 3/4-in. 60c; 1-in. 95c (lengths
up to 30 ft.) Unions: 1/4-in. 35c; 3/8-in. 50c; 1/2-in.
75c; 3/4-in. \$1.00; 1-in. \$1.50.
STANDARD METAL WORKS
6 Beach St., Boston, Mass. Dept. 014



Me-o-my, how you'll take to a pipe—and P.A.!

Before you're a day older you want to
let the idea slip under your hat that this
is the open season to start something with
a joy'us jimmy pipe—and Prince Albert!

Because, a pipe packed with P. A. sat-
isfies a man as he was never satisfied
before—and keeps him satisfied! Why—
P. A.'s flavor and fragrance and coolness
and its freedom from bite and parch (cut
out by our exclusive patented process)
are a revelation to the man who never
could get acquainted with a pipe!

Ever roll up a cigarette with Prince
Albert? Man, man—but you've got a
party coming your way! Talk about a
cigarette smoke; we tell you it's a peach!



Copyright 1921 by
R. J. Reynolds Tobacco Co.
Winston-Salem, N. C.

Prince Albert is sold in tippy red bags,
tidy red tins, handsome pound and half
pound tin humidors and in the pound crystal
glass humidor with sponge moistener top.

PRINCE ALBERT

the
national
joy
smoke

The Nut Industry of the Northwest

By Knight Percy of Salem

THE Northwest country of America can produce commercially three varieties of nuts, chestnuts, walnuts and filberts. The nut producing sections of this region are limited almost wholly to that part of the states of Oregon and Washington located west of the Cascade range.

While there are few or no commercial orchards of chestnuts of any considerable size, still there are groups of trees scattered pretty well over this whole region whose performance is such as to warrant the belief that chestnuts can be grown here commercially in case the market demands are such as to make such groves desirable.

Near Salem is a planting of trees some twenty years of age. In spite of the fact that these trees are planted much too close together and that they have been given poor care they average fifty pounds of nuts per tree annually. Some of the trees have produced 100 pounds and one yielded 150 pounds one season. Other small plantings in the Willamette valley have done equally well. We can be assured of an average yield of at least 1200 pounds per acre. Chestnuts have brought twenty-five to forty cents per pound to the grower on the Chicago market in past years.

The great native chestnut regions of the East which have heretofore furnished the needs of the American trade are fast vanishing as a result of a terrible disease which has been killing off thousands of acres of trees annually for the last twenty years. Plant pathologists say that there is no hope of saving these plantings and that it is impossible to grow commercial plantings in

the area of the native chestnut since the disease spreads to the cultivated varieties. Hence if our markets are to be supplied from foreign sources or else from a limited section of the middle west in which the nut is not native, or from our Pacific Northwest.

There is no question as to whether we can grow the nut here successfully. The question to be decided is simply whether market demands are such as to warrant planting the orchards. The writer believes that in time we will plant a limited acreage of chestnuts along with other nuts.

The chestnut is easy to grow. It thrives on a free soil where drainage is good. It should be planted at thirty-five to forty feet intervals.

The walnut is a nut that has proved its adaptability to conditions of this country. It will some day be listed among our great crops, along with the loganberry and the prune.

The United States has averaged annually for the last ten years an importation of 18,000,000 pounds of unshelled walnuts and 11,500,000 pounds of shelled walnuts. California in 1919 produced 56,000,000 pounds. Consumption of nuts is increasing very rapidly in this country.

Oregon has about 8000 acres of walnuts. Fifty per cent of this acreage will in all probability develop into high grade properties. One may wonder why only half of the total plantings of the state show prospect of succeeding commercially. The reasons are several. The walnut is not adapted to a



ALBATROSS BRANDS

How to prevent the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in



Note the "blotch" or "burn" of the lead on this apple

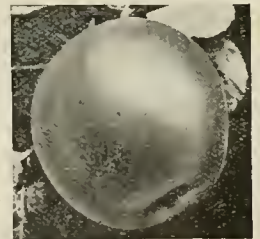
spots—or blotchs. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.



Note the uniform, adhering film on this apple

Directions sent with each order

PACKAGES AND PRICES		
200 lb. Bbl.	Boxes	2 lb. Pkgs.
22¢ lb.	24¢ lb.	25¢ lb.

Freight prepaid to Northwest points.

Note: If you use Casien. Albatross Superfine, is the braod to buy. Very finely ground—quickly soluble when mixed with alkali.



—for storage plants, packing sheds, etc.

During the last six years a very large proportion of the major industrial plants, warehouses, lumber mills and canneries (list on application) have been wade "spick and span" with Albatross Cold Water Paint. This paint is very economical to use—drys snow white—will NOT peel or rub off—retards fire—easy to apply—and when properly applied, reduces insurance rates. Has remarkable spreading and covering qualities—will work over wood, rock, plaster or other material. For almost any kind of commercial interior, Albatross Cold Water Paint is unequalled. Extensively used in the fruit world for storage plants, packing sheds, etc. Tell us your requirements—we can meet them to your complete satisfaction. * * * General Basic Products Co., Sole Manufacturers, 2926 16th Ave., S.W., Seattle, U.S.A. Dealers. Address us for attractive sales proposition.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

wide range of conditions as are the prune, loganberry or filbert. It does very well when conditions favor it, but it is a waste of money to try to make it grow where conditions are unfavorable. A large amount of money has been wasted by trying to grow nut groves in locations where air or water drainage is poor or where the soil is shallow. Others lost out by planting inferior trees or inferior varieties and still others by not properly caring for their trees after they were planted. The young walnut tree requires a lot of babying.

AIR drainage is of first importance in selecting a site for a walnut grove. We know of one grove that has lost crops in recent years from both late spring frosts and from early fall frosts. The hill lands are generally well drained both in respect to air and water, but it does not always follow that because a site is in the hills that such is the case.

The walnut grows to be a large tree and is a heavy feeder and thrives much in proportion to the depth and fertility of its soil. The white, poorly drained, level lands should never be planted to nuts. The river bottoms will grow a fine tree and grow it more rapidly than will the hills, but they are more subject to frost than are the hills. Some locations along the river bottoms seem much more frost free than are others and on these nut growing may be successful. They will usually be hit by frost more often than will the hills, but they will yield larger crops and will bear commercially a little earlier when the frosts do not interfere.

The hill lands are the safest for heavy plantings, especially where the walnut is to be a major crop. Where filberts are to be the major crop and walnuts a minor crop the river bottom soils are best. The hills generally are more free from frost, but are more difficult of cultivation, mois-

ture is more difficult to hold and often the soils are less fertile.

While the walnut is not native to our Northwest country it, nevertheless, finds conditions here congenial. Nowhere in the world is a walnut produced which excels our properly grown and properly cured Franquettes. Too few of our growers understand how to harvest and dry the nut. As it falls off the tree the Oregon walnut has no superior, but poor handling often reduces it to a cull product by the time it reaches the market. By running the temperature a little too high or a little too low in drying the quality of the nut can be seriously injured, and by not properly washing

**TREAT YOUR SOIL WITH
Toro Brand Agricultural
Sulphur**



It will increase your crop in some instances up to 500 per cent, prevent wire worms, smutty grain and potato scab. For Lime - Sulphur Solution use **DIAMOND "S" BRAND REFINED FLOUR SULPHUR**. For dry dusting use **ANCHOR BRAND VELVET FLOWERS OF SULPHUR**. Sold by leading dealers.

For rodent control use **CARBON BISULPHIDE**. Write for circulars 6, 7 and 8, prices and samples.

SAN FRANCISCO SULPHUR CO.
624 California Street
San Francisco, California

B E E S

**The Diamond Match
Company**

APIARY DEPARTMENT
Manufacturers of Bee Keepers'
Supplies

Chico, California, U. S. A.
(The largest bee hive factory in the
world)

Write for catalog and discount sheet; and,
if a beginner, for Cottage Bee-Keeping.

The Hood Shock Preventer



for all cars

Saves springs, brakes, gasoline, tires, time, irons out the road, Snubs the bumps. Eliminates side-sway. No rattle. Be your own judge as to the merit of

THE HOOD
Satisfaction Guaranteed
Ford Sets, \$15. Others up to \$32.50
29 Park St., N. Portland, Ore.

"WENATCHEE" FRUIT AND VEGETABLE
PICKING BAG
(Carpenter's Patent)

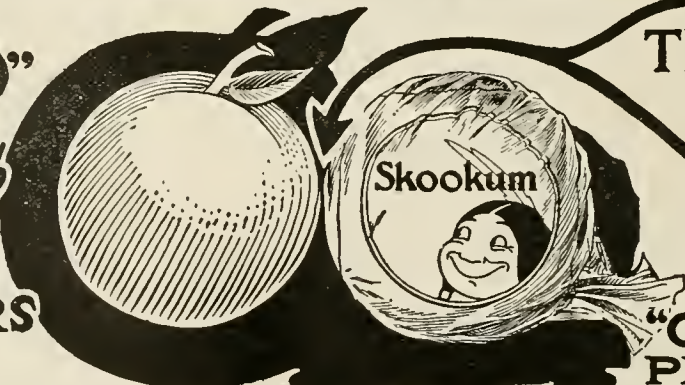


Made of heavy canvas, reinforced with leather, stitched with waxed harness thread, to a steel frame. Halter webb carries the load from the shoulders as suspenders. These patented features make it so popular, serviceable, practical and labor-saving.

Send for Sample, \$2.50 Postpaid.
Special Prices to Quantity Buyers

C. A. CARPENTER
3837 35th Ave. S. W. SEATTLE, WASH.
Also write the Manufacturers and Distributors
SCHOFFER & ROSSUM CO.
ST. PAUL, MINNESOTA

"CARO" fruit WRAPPERS



This is the **POINT**

"CARO" PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure. The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process. FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, **AMERICAN SALES AGENCIES CO.**, 112 Market Street, San Francisco, California

or by keeping in sacks too long after picking and before drying, the shell may become so discolored as to put the nut into the cull grade. One great advantage to our growers who live in centers where the Oregon Growers' Association has drying plants is that they may have their nuts washed and dried by experts equipped with suitable machinery.

The commercial success of a crop depends largely upon its yield. The walnut yields well in this favored horticultural paradise. There is a big black walnut tree near Hillsboro which has been worked over to English walnuts and which bore 408 pounds of nuts one year.

An orchard in the Sheridan highlands produced 25 pounds per tree of dried nuts the ninth year, which gives the lie to the statement that in planting walnuts one is planting for his children rather than for himself. Another orchard at Wheatland on sandy river bottom land bore 500 pounds

per acre the tenth year. These two plantings are grafted orchards and have been well cared for. There is a twenty-one-year-old planting of seedlings at Jefferson which averaged 1000 pounds per acre in 1919 and this from an orchard which was given almost no care at all for many years. The average production per acre in California for the state at large is 800 pounds, although there are plantings which have yielded as high as 400 pounds per acre.

Walnut trees should be planted fifty to sixty feet apart in order that they may not become too crowded in later years. As it takes a good many years for the trees to grow to a size which will utilize this amount of space it is considered good practice to plant between the walnut trees a variety of fruit which comes into bearing young and which does not grow to a large size. The prune and the filbert are best adapted for this purpose.

While the walnut is a little slow to come

into bearing it still makes a very nice crop to grow. With the filbert it appeals especially to the city man who wishes to retire to country life, in that these two crops can be produced with less attention to such details as thinning and spraying and are much easier to harvest than the more perishable fruits.

WHILE the walnut offers many advantages the filbert offers still more and is, in our mind, the most attractive orchard crop in the Northwest, bar none.

Among its advantages is the fact that it blossoms in winter and the pollenization is in little danger of injury from winter rain or frost. The tree is adaptable to a large variety of soils and locations. Its crop is easily and cheaply harvested, no expensive driers or harvesting equipment or large crews of pickers being needed. There is no spraying to amount to anything and no thinning and there are few insects and dis-

Spreado

THE PERFECT SPREADER

Ready for use. Simply stir into the spray solution



Aresenate of Lead
No Spreader.

"SPREADO" produces a uniform coating, completely protecting the fruit.

"SPREADO" increases the adhesiveness of the spray, especially desirable in rainy sections.

"SPREADO" increases the wetting and covering power of the spray, more than paying for itself in the saving of spray material.

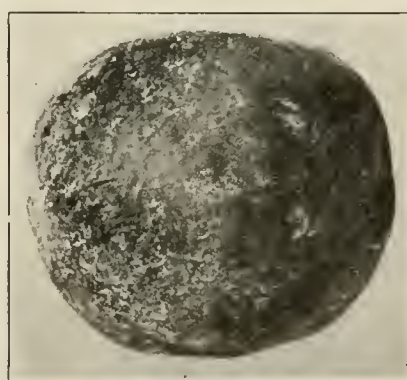
"SPREADO" does not in any way injure the foliage or the fruit.

"SPREADO" is highly recommended as a spreader by the Oregon Agricultural Experiment Station.

DIRECTIONS

When the spray tank is nearly filled, start the agitator and sift in slowly the required amount of "SPREADO." Keep the agitator in motion.

"SPREADO" is especially recommended for use with arsenate of lead for the cover sprays in the proportion of 5 to 6 lbs. of powdered arsenate of lead with 2 lbs. of "SPREADO" to the 200 gallon tank.



Aresenate of Lead
With "Spreado."

NOW Is the Time "SPREADO" You Need

Manufactured by
MILLER PRODUCTS COMPANY
PORTLAND OREGON GRANTS PASS, OREGON

Sold by

Oregon Growers' Co-operative Association
SALEM, SHERIDAN, ROSEBURG AND MEDFORD, OREGON

Eugene Fruit Growers' Association
EUGENE, CRESWELL, AND JUNCTION CITY, OREGON

eases to combat. The nut is not easily perishable and bears at an early age, producing large crops of high-priced products. Overproduction is improbable, the American public consuming now 20,000,000 annually of foreign grown nuts. In fact, this is an ideal "lazy man's" crop, easily grown and returning good dividends.

The filbert will never be grown in any other part of the United States because of limitations of climate and of disease. The one thing that prevents rapid increase in planting in this section is the limited supply of nursery stock. The filbert cannot be propagated rapidly like other trees and it will be years to come before enough trees will be available to fill the demands for stock.

Under ideal conditions the filbert will begin to produce commercially the fifth

year and will increase rapidly in yield thereafter.

The Moission orchard near Salem produced a ton per acre the tenth year and it was not in the best condition possible. The Kruse orchard at Wilsonville, one of the finest in the state, produced thirty pounds per tree the tenth or eleventh year. This is at the rate of 3000 pounds per acre. The owner received thirty cents per pound that year which netted him a very fine revenue. However, we cannot expect that price now that prices are returning to normal, although we can expect eighteen to twenty-five cents to the grower.

There is a thirty-two-year-old tree in East Portland which produced 150 pounds one year. This is at the rate of over seven tons per acre. George Dorris, the veteran filbert grower of Springfield, states that an acre of number one Barcelona trees, given everything favorable, should produce 500 to 1000 pounds the fifth year; 2000 to 3000 pounds the eighth year; 3000 to 4000 the tenth year and 4000 to 5000 pounds the twelfth year. Dorris is perhaps the best posted man on filbert yields in America, but if we discount his estimates by fifty per cent we still have a most attractive commercial proposition.

Nut growing is one of the most attractive fields open in this section of the country. It is especially attractive to the man coming from other avenues of life than that of farming. The man who leaves behind him a well grown grove of walnuts and filberts will leave his children a legacy that will insure them a steady income. It will be but a few years until the nut industry will rank in importance with the berry, prune and apple industries of the Northwest.

Transportation Problems

(Continued from page 7)

cannot be overestimated, and it is our purpose to develop it to the highest state of efficiency, still our domestic trade is and for many years to come will probably remain our main source of demand.

Situated within 300 miles of the coast of the Pacific Coast we have a population of 6,000,000; within 300 miles of the Gulf of Mexico and the Atlantic ocean, including the coastal zone of Eastern Canada, we have a population of 58,000,000. As a further illustration, within 25 miles of the Statute of Liberty in New York harbor there resides a population of 8,000,000, which is greater than the combined population of the seven states of California, Oregon, Washington, Idaho, Montana, Utah and Colorado.

Tributary to the Port of New Orleans they claim a total of 13,869 miles of navigable rivers. This inland waterway, in connection with the New York barge canal, creates what we term the Inland Waterway Zone, having a population of 25,000,000.

IT HAS been said that the secret of success is to grasp an opportunity when it presents itself. This is our opportunity, to distribute the deciduous fruits of the Pacific Northwest and the citrus fruits of California to the 58,000,000 people resident within the Gulf and Atlantic coastal zones.

These figures illustrate most forcibly the concrete fact that the United States is destined to become a maritime nation. The demand for efficiency and elimination of waste, the necessity of applying more closely the fundamental principles of economics, and the positive demand for lower rates of transportation if our industries are to survive, constitute the primary causes of the present national movement for water transportation.

An analysis of the consumption of western fruit in our domestic markets shows that the large population of the southeast section of the United States does not purchase its portion. It is our firm belief that water transportation will alter this condition and result in a tremendous increase of consumption in that territory.

It is gratifying to note that the United States Department of Agriculture is to equip a vessel for the express purpose of making a comprehensive study of the transportation of western fruits via the Panama Canal to the Gulf and Atlantic ports. It shows that our government is awake to the necessity of intelligent and constructive effort and the result of this study will mean much distribution to the world's markets.

YAKIMA County Beekeepers' Association, numbering more than 400 apiarists, has elected J. P. Espey of White Swan, president; R. C. Immell of Toppenish, vice-president, and C. W. Higgins of Wapato, secretary-treasurer. H. N. Paul of Mabton will be purchasing agent.

Box Shooks

East Side Box Co.

Manufacturers
**SPRUCE AND
HEMLOCK**

Box Shooks

Foot of Spokane Avenue
Portland, Oregon



The Gasoline of Quality

"Red Crown" is the gasoline of quality—the power-full motor fuel. Its continuous chain of boiling points also insures ready starting and rapid acceleration. It is the well-balanced motor fuel.

Get it wherever you see the Red Crown sign on service stations and garages.

STANDARD OIL COMPANY
(California)

Fifteen Years

(Continued from page 5)

either way for failure or success, of the endless fight to place his fruit in a market flooded from other districts. Let the growers in on the problems every selling organization has to face; educate them to a proper realization of the difficulties of sales, deliveries and collections, and there will be less criticism, less dissention and a more wholehearted co-operation, which will make for success.

Co-operation in some form or other is the bulls-eye at which so many shots are being fired, with so comparatively few hits registered, but, with the vast experience of the past, the fruit growers of the Pacific Northwest are unwise indeed if they do not train their sights for a clean hit.

“In Every Respect”

says the Good Judge



You get more genuine chewing satisfaction from the Real Tobacco Chew than you ever got from the ordinary kind.

The good tobacco taste lasts so long—a small chew of this class of tobacco lasts much longer than a big chew of the old kind. That's why it costs less to use.

Any man who has used both kinds will tell you that.

Put up in two styles

W-B CUT is a long fine-cut tobacco

RIGHT CUT is a short-cut tobacco

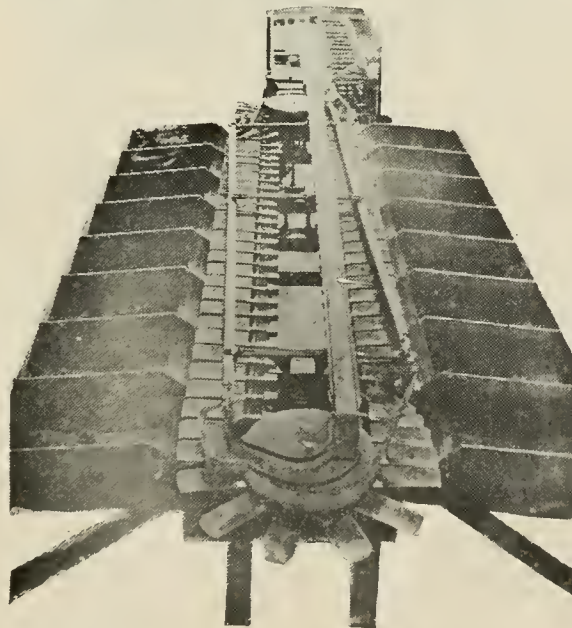
Weyman-Bruton Company, 1107, Broadway, New York City

**Before You Buy a Grader
See The NEWELL!**

A Perfected Weighing Machine, Accurate and Efficient

The operation is simply this: Fruit is raised automatically from hopper to sorters, by conveyor belt, fixed with rollers to prevent bruising. Passed by the sorters, it is deposited by belt conveyor, one at a time, upon aluminum scales, which are attached to single sprocket chain, carrying fruit along the side of the shunt-board, which gradually pushes them farther out on scales, until their weight tips scales, depositing them in packer's bins. All fruit of same weight will tip scales at same bin; it must function!

If fruit is running large, shunt board may be set in; if small, set it out. This is the only necessary adjustment.



Made in Two, Three and Four Section Models

*A Few
Outstanding
Features of the
NEWELL*

Low Hopper—no step up when filling.

Automatic feed from hopper to sorting table; controlled by head sorter without leaving his place.

One piece scale with no delicate adjustment to get out of order or wear out.

Scales on SINGLE chain, not double.

TIMOTHY NEWELL, Manufacturer

Parkdale, Hood River Valley, Oregon

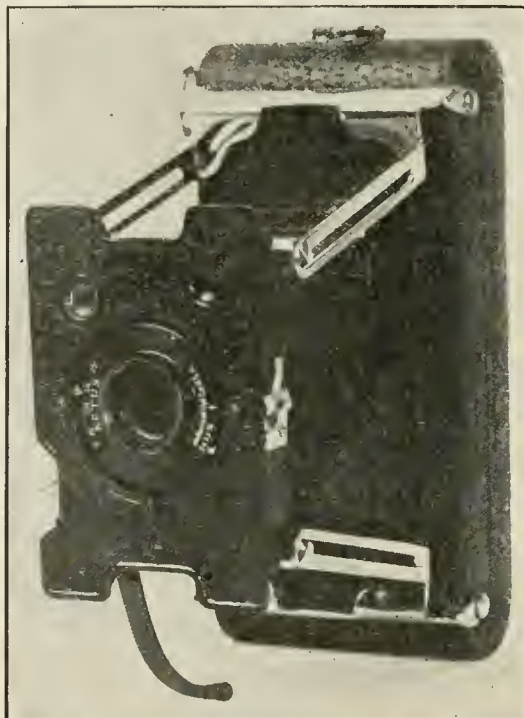
We Want You to Have One of These FINE CAMERAS

*The Season for Picture Taking Is Here,
So Let Us Know That You Want One*

BOYS---HERE IS YOUR---GIRLS
OPPORTUNITY---

How fine it would be to have a camera all your own. You can keep a picture record of your camping trip, and go over it all again next winter around the fire. You can make beautiful pictures and frame them for Christmas gifts for your friends, or to hang in your room.

Any boy, girl, man or woman can easily



earn one of these handsome, standard Ansco 2 1/4 by 3 1/4 Cameras in a few days. All you need do is to tell your friends what a good magazine BETTER FRUIT is, and get them to give you their subscriptions. When you get twelve subscriptions at \$1.00 each (\$12.00 in all) send them to us and we send you the camera absolutely free and post paid.

Make Up Your Mind Right Now

to earn one of these machines. You will be surprised how easily and quickly you can get the necessary twelve subscriptions, so mail the coupon today and get started.

Dad's renewal will count as one. GO GET HIM. When you go to your friends, tell them what you are going to get, and they will surely give you their subscriptions.

Renewal subscriptions at \$1.00 each will count the same as new subscriptions. A few hours' work at odd times and this fine Camera is yours.

Mail This Coupon Today →

or your friends may get a start on you.

Further, we absolutely guarantee you a generous reward for your efforts, whether you secure two subscriptions or twenty; send the coupon NOW. You may forget it tomorrow.

BETTER FRUIT

12th and Jefferson Sts.

Portland, Ore.

BETTER FRUIT
12th and Jefferson Sts.
Portland, Oregon.

Gentlemen: I am going to earn one of the Cameras. Please send me receipt blanks and complete information.

Name

Address

R. F. D.

SOONER OR LATER

Some kind friend will tell you about

Bailey's

Fine Kodak Prints and Enlargements

Why not let us serve you now?
Send in a couple of film negatives for two FREE SAMPLE PRINTS

A. A. Bailey, Jr.

LIPMAN-WOLFE BUILDING
PORTLAND, OREGON

Save and Prosper

With constant systematic saving your account should grow to be the foundation of a fortune.

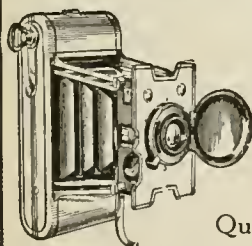
You will have capital to invest advantageously when opportunity offers. You will be on the road to success.

A Savings Account may be opened with an initial deposit of one dollar.

The First National Bank

OF PORTLAND, OREGON

The first national bank west of the Rocky Mountains



FREE!

An 8x10 enlargement with \$3.00 worth of Kodak finishing

Quick Service!

Films received forenoon, mailed out same day. We pay return postage and give S. & H. Green Trading Stamps with all Kodak Finishing Orders. Try us!

Kodaks Accessories
Films Albums

Woodard-Clarke & Co.

Alder at West Park Portland, Ore.

Northwest Fruit Notes From Here and There

OREGON

AT the annual convention of the Oregon State Bankers' Association at Seaside last month, Vice President Cox, of the National Bank of Commerce, New York City, made an interesting address. Mr. Cox said that fruit growers must increase the quality and decrease production costs, if they were to show a profit over a period of years. He called attention to the fact that the raising growers of California had suddenly awakened to the fact that their product was too generally considered as a luxury, and they immediately took steps to correct the situation. The first aim of all growers should be to produce their crops cheap enough to assure their coming in the staple list.

P. L. MANSER, secretary and manager of the Hood River Fair Association, reports that plans are being laid for the biggest fair in the history of the apple valley next September. More than usual interest is being shown throughout the valley.

WESTERN OREGON walnut growers have every expectation of a record breaking crop this year, according to Earle Percy, president of the Oregon State Horticultural Society, and an authority on nut culture. Mr. Percy says that the Manchurian walnut shipped to this country from Japan, without flavor and often wormy, hurts the local demand, for many people do not know the difference between our Oregon grown English walnuts of fine flavor and thin shell, and the poor, thick-shelled Manchurians. One who gets the Manchurians a few times, is going to buy some other nut, and will be lost as a walnut consumer.

A NEW grading and apple packing plant will be erected at Sutherlin, Oregon, at once, to care for some of the big crop expected in the valley. The new plant will be 50x100, two stories and modern in every respect.

THE Marion county loganberry crop this year is estimated at 10,000,000 pounds, an increase of approximately 30 per cent over last year. Canneries will handle most of the crop.

HOOD RIVER'S 1921 strawberry harvest is a thing of the past. Ninety-three cars were shipped in all instead of the estimated one hundred and ten. The fruit was of high quality, and an average price of approximately \$2.50 per crate was realized. Cherries are not yielding as heavily as was at first expected, only three cars having thus far been shipped, one of straight Royal Annes, one of Bings and Royal Annes and one of Black Republicans and Bings. There will be perhaps two cars more, mostly Lamberts.

WASHINGTON

AN interesting map of the Wickersham quadrangle has just been published by the geological survey. The scale is one inch to the mile. This map may be purchased from the Director, United States Geological Survey, Washington, D. C., for ten cents.

THE cranberry district of Pacific county is threatened with serious loss through the black headed fire worm and the end rot, according to Charles L. Robinson, supervisor of the state department of agriculture. After an inspection trip recently made by Mr. Robinson, Professor O. M. Morris of Pullman, Senator E. L. French and inspector Theo. Albert, a special appropriation was made by the Pacific county commissioners for intensive control work this summer. The department has been fortunate in arranging for P. S. Darlington, inspector of district No. 4 at Wenatchee, to assist the growers of Pacific county this summer.

ACCORDING to P. R. Parks, manager of the Spokane Fruit Growers' Association, it will cost the growers \$1.50 per 100 pounds to ship apples to Chicago under the 10 per cent freight rate cut. Mr. Parks further stated that shippers were continuing their plans for water transportation, and would do so until the rate came down to at most \$1.25. The fruit growers, he said, will not be in a really favorable position until the old rate of \$1.00 per hundred pounds comes back.

THE nineteenth annual meeting of the Pacific Coast Association of Nurserymen will be held at Seattle, July 12, 13 and 14. C. A. Tonneson, secretary, can be reached at the Butler Hotel, Seattle, the headquarters of the association while in session. Authentic reports of the nursery stock situation for next spring point to a decided shortage in many lines. This means that the early bird will have the best selection.

THE summer session of the Washington State Horticultural Association will be held in Yakima July 26-27, according to M. L. Dean, secretary of the association. W. L. Close and the Yakima Valley Traffic and Credit Association are co-operating in arranging for the meeting. The potato growers of the state will hold a two-day meet following the fruitmen's meeting, to discuss cultural methods and to establish standard grades.

THE Yakima valley now expects approximately 900 cars of peaches this year, as against 120 cars last year. This estimate is a cut from the earlier one of 1500 cars, but is a material increase over a year ago. In 1919, 2,060 cars were shipped.

BANKS of Spokane, New York and Wenatchee have underwritten a loan of from \$500,000 to \$600,000 for the Wenatchee District Co-operative Association. The issue is of 8 per cent serial crop-moving notes and is a new plan in the Northwest for financing co-operative organizations. This loan will enable the Wenatchee District Co-operative Association, which was recently organized, to finance its members who will require assistance, in boxes, paper, warehousing and cash advances. The association has 457 members, which makes the loan average more than \$1200 per member.

SKAGIT COUNTY, Washington, harvested an exceptionally large strawberry crop. A large share of these berries were placed upon the fresh market at a price which averaged the grower around \$1.50 per crate. The Burlington Canning Company in Burlington, Wash., has been taking care of its strawberry contracts, paying during the early part of the season six cents per pound and later dropping to five cents per pound. The Everett Fruit Products Company, which has considerable strawberry acreage under contract in Skagit county, has with the co-operation of the growers been placing strawberries in barrels with the idea of putting these on the market at some later date.

J. S. McINTOSH, deputy agricultural commissioner of the state of Washington, has compiled figures showing that Washington last year grew 728,759 bushels of pears, more than double the amount grown during 1909. At the same time it produced 1,534,859 bushels of peaches. Ten years earlier 84,500 bushels was the amount of this state's peach crop—showing an increase to over 18 times the crop of 1909.

FRUIT growers and shippers of Yakima will save \$56,000 this year on paper alone at two cents less a pound than the price paid last year. It is estimated that fruit wrap will cost the valley growers \$375,000 this season, on a basis of 70 cars needed for the season's crop, besides 30 cars estimated held over from last year.

THE Wenatchee District Co-operative Association has taken over the five warehouses of the Wenatchee Northern Warehouse and Marketing Company at Wenatchee, Cashmere, Monitor, Olds and Rock Island, the price being in the neighborhood of \$150,000.

IDAHO

LEWISTON ORCHARDS, outside of the city of Lewiston, was settled about 1907, and is a communistic organization covering 4300 acres divided into individual orchards. The residents enjoy electric lights, city water, church, school, community packing house, several miles of paved streets and as many more of macadam. The growing season is long, the soil very productive, the scenery unsurpassed. Land sells for from \$250.00 per acre up, according to improvements. Elevation approximately 1400 feet. Apples are the principal crop, though other fruits and vegetables grow to perfection as well.



LAST year the state loaded 3100 cars of apples and has every expectation of shipping about the same number this year. The prune crop will probably be the largest ever raised, conservative estimates placing the amount at 1550 cars, as against 1267 cars shipped in 1920: Below is given estimate of condition of various fruits averaged from reports from ten important counties.

Apples	83.8
Prunes	84.2
Pears	67.8
Peaches	48.5
Cherries	60.4



THE summer session of the State Horticultural Society held on June 11 at Fruitland, was reported the most interesting of these meetings ever held. There were demonstrations of sprays and spraying, and top-working of trees, also many of the problems confronting the growers were discussed by experts from all over the state.

What They Are Doing in California

RUNNING true to the progressive form of the state, Imperial valley melon growers and shippers are co-operating with the Bureau of Markets, United States Department of Agriculture, in the matter of broadening their distribution. The department opens a temporary office at Brawley, Calif., at the beginning of the season, and by means of a large chart is able to know the daily distribution of each day's shipments and diversions. It is in telegraphic communication with 20 to 25 of the country's big markets and is able to visualize upon the chart the exact state of each for the benefit of all shippers, who have free access at all times to the chart. There is no discrimination; all have an equal knowledge of market conditions.



SIXTEEN years ago California supplied only about one-fourth of the lemons used in the United States, the balance being imported from Sicily. Today three-fourths of this country's demand is grown in the state. There are today 22,651 acres of bearing lemon trees and 16,799 acres non-bearing. This means that some day we will be producing approximately 75 per cent more lemons than we do today.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
Salesmen everywhere. More wanted.

At the Sign of the Fir



Do You Like Your Letterhead?

We have just one recipe for making a good letterhead. It is: Mix (1) sales experience, (2) a knowledge of design, and (3) common business sense.

This combination results in good stationery at the lowest possible cost.

It is rare, indeed, that you find all these "ingredients" combined in one organization. But you do in Arcady.

Telephone Main 8829

The Arcady Company
Complete Advertising Service

WRITING PRINTING MAILING ARCADY BLDG. MULTIGRAPHING MAILING LISTS 1226 JEFFERSON



GOPHER DEATH TRADE MARK



Kills prairie dogs, ground hogs, ground squirrels, Pocket gophers. Saves alfalfa. Experimental stations approve. 1000 tablets P. P. \$1.50. Warranted. Ask your druggist or send direct. Booklet Free. Address

FT. DODGE CHEMICAL CO., Ft. Dodge, Ia-29

“111”

ONE-ELEVEN Cigarettes

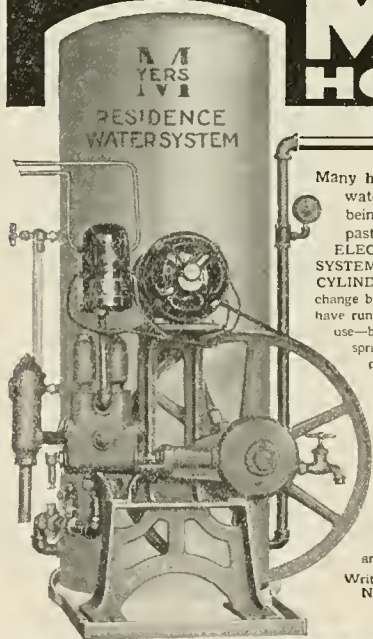
To tell you of the care in blending tobaccos for ONE-ELEVEN Cigarettes would be highly interesting But—just buy a package and find out.

“111”

20 cigarettes 15¢

Guaranteed by **The American Tobacco Co.**

MYERS ELECTRIC HOUSE PUMPS



RESIDENCE WATER SYSTEM

Many homes and farms are being modernized by handy water facilities, and their water supply instead of being a heavy burden as it always has been in the past, is now their best servant. MYERS ELECTRIC HOUSE PUMPS, DIRECT WATER SYSTEMS, HYDRO PNEUMATIC PUMPS and CYLINDERS are playing an important part in this change by making it possible for any home anywhere to have running water at the turn of a faucet for household use—bath, kitchen, laundry, toilet; for stock watering, sprinkling fighting fire and innumerable other purposes.

MYERS PUMPS for Private Water Systems are simple, easy to install and operate, fully proven and dependable. They are designed and built in many styles and sizes, and thus will meet your requirements as to capacity, depth of your well or cistern and method of operation. If you are still carrying water from some outside source, you are interested in MYERS "Honor-Bit" PUMPS for a Myers Water System will save you more real hard work every day in the year than perhaps any other device in your home or on the farm.

Write immediately for copy of our late Catalog, No. HF20—Sent to anyone without the least obligation.

THE F. E. MYERS & BRO. CO. No. 135 ORANGE ST. ASHLAND, OHIO. ASHLAND PUMP AND HAY TOOL WORKS

Pacific Northwest Distributors **Mitchell LEWIS & STAVEN CO.** Portland, Oregon Spokane, Wash.

BUY FROM THE LOCAL MITCHELL DEALER

GOVERNOR WILLIAM D. STEPHENS recently telegraphed President Harding that thousands of acres of food in California, especially potatoes, will not be harvested unless some relief is forthcoming in the matter of freight reductions. Governor Stephens stated in his telegram that the state's vegetable industry is "slowly but surely being strangled to death by what seems to the producers to be prohibitive rates."

Cannery Notes

W. E. ST. JOHN in charge of the big plant of the Oregon Growers' Co-operative Association at Sutherlin, Oregon, announces that canning machinery is being installed in the main building, and everything made ready to handle the big loganberry crop in the valley and vicinity.

CALIFORNIA, the greatest of all our states in the matter of the canning of fruits, canned in 1920, fruit of approximately \$110,000,000 in value, while the little island of Hawaii put up a pack of pineapples alone to the value of \$31,000,000.

H. F. DAVIDSON, president of the recently formed Oregon Canning Company, operating five canneries, in speaking of the cannery situation says: "Marketing conditions this year do not warrant a capacity pack. For this reason we will be unable to take all the fruit offered, but will handle all we can with safety, and will pay the growers as much as we can afford under the existing conditions."

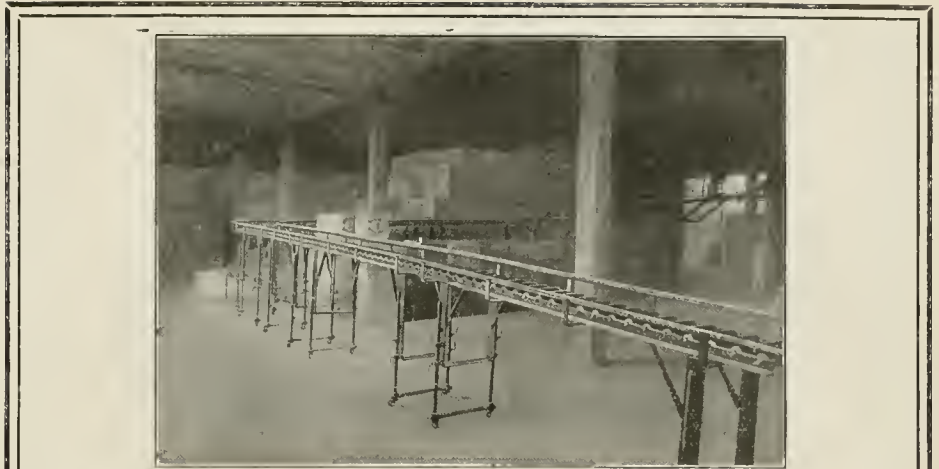
THE Hood River cannery has been running strawberries and will handle cherries, pears and peaches as they come along.

THE Idaho Canneries, Inc., at Payette, canned 16,700 cases of fruits and vegetables in 1920. The management reports a production plan for 77,000 cases this year, warranted they say, by the ready demand for their pack last season.

AS a result of an agreement between creditors of the A. Rupert Company and the recently organized Oregon Canning Company, at least two of the big Rupert Company plants in the Willamette valley will be operated this season. There is a possibility of more than two of the plants being operated. This means that a much larger proportion of Oregon's fruit crop will find a market this year. The amount handled by the plants will depend largely upon the growers. The two plants which will definitely begin operations are located at Newberg and Lebanon. They have a combined packing capacity of about 400,000 cases of fruit and vegetables and are the largest of the Rupert canneries. Negotiations are also under way for the operating of the McMinnville and Roseburg plants and for subleasing the plant at Springbrook. The Oregon Canning Company controls all five of the plants. In addition the company has acquired the Rupert brands and has taken over the Rupert office, plant staffs and its nation-wide distributing organization. H. F. Davidson of Hood River is president of the company.

Oregon Growers' Association Notes

AT a meeting of the Oregon Growers' Co-operative Association members last month, a price of one cent a pound for cherry picking this season was unanimously agreed upon. This price was voted for loganberry picking also, but no definite decision was arrived at as to offering a bonus to pickers who stayed through the entire season. Last year many school children were able to make as high as \$6.00 a day, with a picking price up to 4 cents a pound, more than the berries are bringing this year.



Your Plant is Rich

In This Free Power—Are You Using It?

Gravity—this universal free power is ever present in every nook and corner of your plant. It is there, waiting to be harnessed and transformed into a force that will put your indoor handling on an efficient and economical handling basis.

Your product can be neatly and swiftly conveyed from truck to warehouse, from floor to floor, with a saving in labor cost and time.

Without obligation, a Standard engineer will show you the best way to utilize this FREE FORCE with Standard Conveyors.

Write for Book, "Entrance to Better Knowledge on Handling Methods."

Standard Conveyor Company

NORTH ST. PAUL, MINNESOTA
Representatives in all principal cities

A Coast-wide Institution with a localized Service



San Francisco
Sacramento Stockton
Fresno Portland
Seattle Tacoma

C. E. RAMP, manager for the Oregon growers at Dallas, reports that many prune orchards in the district south of Independence, will produce heavy crops of large-sized fruit. Earlier reports from most of the prune districts were to the effect that there was a universally short crop in all districts, so that Mr. Ramp's findings are encouraging.

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.
Catalog mailed on request.

With the Poultry

CHANGING GROUND

RAISING chickens on the same ground year after year is frequently the cause of disease in chicks. The colony houses for chicks should be moved to fresh ground each second year. The soil of the old run should be broken up and corn, oats, alfalfa or garden truck grown on it. The plowing of land and growth of a new crop is beneficial from the standpoint of sanitation.

Many brooder chicks that are started and kept confined in a very small run contaminate the ground in a very short time and by the time they are eight weeks old, the young chicks fail to make a satisfactory growth in response to the feed they consume. The trouble lies in the fact that every time they pick up a grain of feed they take into their system the infection of the soil. It is desirable, therefore, to get them on fresh ground at frequent intervals and feed them on fresh ground.

HOW TO TREAT GAPES

DURING the early summer much trouble is experienced by poultrymen with gapas in chickens, caused by worms in the windpipe. The larva of this parasite is picked up by the chickens in the damp earth and the parasites detach themselves in the windpipes of the chickens, where they first cause irritation and upon growing obstruct the passage of air.

Where chickens are affected they should be placed in a pen or room which has been sprinkled freely with slaked lime. A few drops of turpentine added to the rations may be beneficial in controlling the disease. In an effort to dislodge the worms, feathers may be dipped in turpentine and passed down the chicken's windpipe. Worms are sometimes removed with a twisted horse hair or a specially prepared instrument that may be obtained at any poultry supply house. However, prevention is the best means of control. Lime the soil where gapas—infected chickens—have run. Confine the chickens so that they cannot run under out-buildings and in shady or in damp places. Where a chicken is badly infected with gapas, it is best to kill it and burn. Confine unaffected chickens in a yard freely sprinkled with a liberal amount of freshly slaked lime.

PREPARING POULTRY FOR MARKET

EXPERTS in poultry raising advise that in selecting chickens for market they should not be fed from 15 to 18 hours before killing. In killing either stick the chicken in the roof of the mouth or dislocate its neck by bending the head back as far as it will go and then at the same time pulling the neck. It is preferable to dry pluck the chicken as soon as it is killed, but by care in scalding it can be made to preserve a good appearance. To do this hold the chicken by the head and feet and immerse the body sufficiently long to soak the feathers in water that is not quite boiling. The feathers then can be removed by inexperienced help without trouble. By leaving the feathers on the upper half of the neck, few can tell that the chicken has been scalded. If the head and feet are placed in hot water, the head turns pale and shrinks, while the shanks scale off.

In hot weather immediately after plucking the chickens should be placed in tubs of ice or cold water where they should remain for several hours to be chilled before being packed for shipment.

By using the chilling system and packing carefully poultry can be transported long distances in warm weather and arrive in good condition.

ONE of the best antiseptic sprays for use in the hen house is Carbolineum. It is a sure preventive of mites and red spider when applied properly, and is a general cleanser.

DO NOT expect your hens to produce many eggs if you simply turn them loose in the orchard and give them no other food than that which they can pick up. The best time for the grain ration is in the morning, and it can be scattered in the litter at night in the hen house, so that by the time they are let out in the morning they will have worked for and found practically all the grain. With one good grain feed a day to augment what they can rustle, they will pay for their care.

DISINFECTANTS help keep up the health of chicks. It prevents the spread of diseases, destroys mites and lice and kills germs of contagion and infection. The coops and houses should be cleaned and sprayed thoroughly at least once a week. Prevent the disease before it makes its appearance.

THE low price of eggs this summer means that more of them are being eaten fresh and fewer are going into cold storage, which will mean that the man who keeps his hens for fall and winter laying will in all probability enjoy high prices for all the eggs he may have to sell.

IN TRAP nesting one nest for each three hens is about right.

SOFT shelled eggs are caused by the hen being too fat, or from a lack of lime in the ration. Laying hens should have access at all times to a plentiful supply of lime, grit and charcoal.

MOST people strive for the earliest possible hatch of chicks. This is all right if you expect to market them for food, but for the best egg production later hatched chicks are the best, for pullets hatched before March 15 are pretty apt to molt the next fall, whereas when they hatch after that date they rarely molt until the fall of the next year.

IT IS a common belief that the dark-colored eggs are the richer in flavor. This is not true, however, for it is the food the hens get that flavors the eggs.

Bits About Fruitmen and Fruit Growing

ACCORDING to Ralph Budd, president of the Great Northern railway system, the fact that the Pacific Northwest will have a bumper apple crop this year, has prompted his road to place orders with the American Car & Foundry Company for 500 refrigerator cars, to be delivered by October 15. Mr. Budd stated further that the Great Northern had on its lines 87 per cent of its cars at this time, as against 35 per cent a year ago. This is an encouraging sign, and shows the interest our fruit awakens in the big carriers.

DWIGHT L. WOODRUFF, eastern sales and export manager for the Hood River Apple Growers' Association in New York, has been employed as general manager of the Wenatchee District Co-operative Association and will take charge

Some Reliable Northwest Nurserymen

**An Early Order
For Fall or Spring
Delivery**

Placed with

**SALEM NURSERY
COMPANY**

428 Oregon Building
SALEM, OREGON

Will receive careful attention and give you good choice of varieties

Additional Salesmen Wanted

**Capital City Nursery
Company**

426 Oregon Building
SALEM OREGON

*Will supply you with
first class stock in*

**FRUIT, NUT AND OR-
NAMENTAL TREES,
SMALL FRUITS,
ROSES**

Send for catalog

WE Need Salesmen

Plant a Patch

of these

Everbearing Strawberries

for your own use

They have a wonderful flavor, and will keep coming long after all other berries are gone.

Four dozen tested Everbearing plants mailed prepaid for \$1.00

Write for information and list of varieties to

Evergreen Plantation
New Meadows, Idaho

<p>Musical Merchandise</p> <p style="text-align: center;">—</p> <p style="text-align: center;">Write Us</p>	<p>WE SAVE YOU MONEY!</p> <p style="font-size: 1.5em;">W. Martius Music House, Inc.</p> <p>1009 First Avenue, Seattle, Washington</p> <p>Everything Known in Music</p>	<p>SHEET MUSIC</p> <p style="text-align: center;">—</p> <p style="text-align: center;">Write Us</p>
--	---	--

June 1. Mr. Woodruff was connected with the old Wenatchee Valley Fruit Growers' Association 13 years ago, and went from there to Salem, where he was at the head of a fruit growers' association. He then took his position with the Hood River association, and has been in New York five years. Announcement is made by the association that a loan of \$1,000,000 has been made through Spokane and New York banking interests, to be used by members of the association in growing and harvesting their crops. Contracts for 3,000,000 apple boxes have virtually been closed, mostly with local mills. The entire crop of association members, estimated at 4500 cars, will be marketed

through the North American Fruit Exchange of New York.

▲ ▲ ▲

THE United States Department of Agriculture is forever on guard to protect our agricultural and horticultural interests. One of the latest protective measures it has instituted is Quarantine No. 37, relative to the importation of nursery stock, which reads: "Where any packing material is needed for the safety of nursery stock * * * such materials as sphagnum, cocoanut fibre, straw, chaff, excelsior, shavings, saw-dust, charcoal and ground peat may be used. Such packing material must not have been previously used as packing or otherwise

in connection with living plants and must be free from sand, soil or earth, and must be so certified by the duly authorized inspector of the country of origin."

▲ ▲ ▲

THE United States Department of Agriculture reports a big increase in the number of stands of bees in many eastern states. Why are not our Northwestern states on the list? Here where fruit growing occupies such a prominent place, and where we claim to be leaders in the adoption of modern methods, surely every orchard should have at least one stand to assure pollenization.

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS, JACOBS & CO., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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

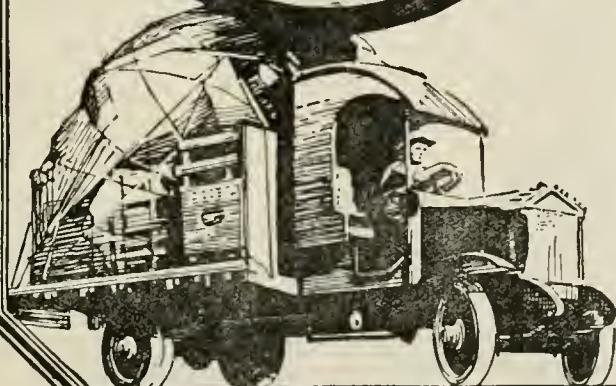
SIMONS FRUIT CO.
Toronto and Montreal

SIMONS, SHUTTLEWORTH, WEBLING CO.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

*A grade for each
type of engine*

*Keep faith with
your truck engine*



Your truck engine is an investment. You expect it to give you full service—maximum performance and long life.

Your truck engine will not deliver full service unless you keep it correctly lubricated.

Zerolene is Correct Lubrication. Our Board of Lubrication Engineers has recommended a grade of Zerolene for *your* engine and embodied that recommendation in the Zerolene Correct Lubrication Chart. Ask for one.

STANDARD OIL COMPANY
(California)

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

FARMS FOR SALE

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANT to hear from parties having farm for sale. Give particulars and lowest price. John J. Black, 197th St., Chippewa Falls, Wisconsin.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., E.K. Washington.

LOGGED-OFF LAND in Stevens County, Washington, at greatly reduced prices: Why bother with fruit land at high prices when you can get good dairy and stock land at from \$5.00 to \$20.00 per acre? Write for folder. Phoenix Lumber Co., Dept. B, Spokane, Wash.

MISCELLANEOUS

ARROW CARBOLINEUM kills chicken mites in poultry houses. Preserves wood against rot and premature decay. Write for circular and prices. Carbolineum Wood Preserving Co., 222 E. Water St., Portland, Oregon.

TOBACCO—KENTUCKY NATURAL LEAF, chewing and smoking; rich, ripe and mellow; two and three years old, aged in wood; 2 lbs., \$1; 7 lbs., \$3; sample 10 cents. Maddox Bros., Dept. 22, Mayfield, Ky.

TOBACCO—Kentucky's Natural Leaf Smoking or Chewing; mild or strong; aged in wood; rich and sweet; 5 lbs., \$2; second grade, 10 lbs., \$2.75. Postpaid. Waldrop Bros., Murray Ky.

CORN HARVESTER cuts and piles on harvester or winrows. Man and horse cuts and shocks equal Corn Binder. Sold in every state. Only \$28 with fodder tying attachment. Testimonials and catalog FREE showing picture of Harvester. Process Harvester Co., Salina, Kansas.

DO YOU EVER USE TENTS? We have them! Good U. S. Army Tents, 9x9—12-ounce at \$10. They make fine housing for your pickers, also as extra shelter in a pinch. Also have few more of our fine Wagon Covers for hauling fruit in rain, 10x15 at \$7.50 each. We have limited quantity tarred tree twine at 10 cents a pound. You can't touch this price anywhere else.—Alaska Junk Co., 203 Front St., Portland, Ore.

POULTRY

ORDER CHICKS NOW for delivery any time after August 1st. Broilers pay, Pullets make good layers. R. I. Reds, White Leghorns, Barred Rocks. Safe arrival guaranteed. Write for circular. Stuhbe Poultry Ranch & Hatchery, P. O. Box 67 Palo Alto, Calif.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO. 427 Oregon Building Salem, Oregon

AGENTS WANTED—Benedict Nursery Co., 185 East 87th St., Portland, Oregon.

NOW is the time to send to
Milton Nursery Co.
MILTON, OREGON
For their 1921 Catalog
Full Line of Nursery Stock
"Genuineness and Quality"

THE BEST IN TREES AND SHRUBBERY
BOTH FRUITS AND ORNAMENT
E. A. Bennet Nursery Co.
1030 Chemeketa Street
SALEM, OREGON

Phone Main 6018 for
Rubber Stamps, Seals
Stencils
ROGERS COMPANY
514 Gerlinger Building
Portland, Oregon

**ARTISTIC
LABELS**

HIGHEST QUALITY EMBOSSING

THE SIMPSON & DOELLER COMPANY

WESTERN OFFICES

<p>PORTLAND, OREGON 1422 NORTHWESTERN BANK BUILDING</p>	<p>SAN FRANCISCO, CAL. 1 DRUM STREET</p>
--	---

FACTORY

BALTIMORE, MARYLAND

EASTERN OFFICES


<p>NEW YORK CITY 709 FRANKLIN-HUDSON BUILDING</p>	<p>BOSTON, MASS. 427 BOARD OF TRADE BUILDING</p>
<p>PHILADELPHIA, PA. ROOM 227 1011 CHESTNUT STREET</p>	<p>NEW ORLEANS, LA. 1-S. McELHINEY BOARD OF TRADE BLDG.</p>

SPECIAL ATTENTION GIVEN TO NEW ACCOUNTS
WE CARRY A FULL LINE OF STOCK LABELS

WHAT IS YOUR INCOME?

**You Can Tell Uncle Sam
If You Keep Farm Records!**

**Tweed's
Cost
Records**



—will make it possible for you to comply with the law. A few minutes a day is all that is required to keep these simplest of records. No knowledge of bookkeeping is necessary. What would you think of a merchant who kept no books? You fruit growers are in a business just as much as any merchant, yet many of you keep no records, and do not know where the leaks occur.

TWEEDS COST RECORDS have been worked out carefully by a man who was raised on a farm and knows from experience how little time a farmer has for bookkeeping. Hundreds of farmers are finding the TWEED SYSTEM simple and practical. Write today for full particulars, stating size and kind of farm you operate.

FARM SUPPLY CO.

281 Twelfth Street Portland, Oregon



New Life for Old Shingles

OTHER QUALITY PRODUCTS

especially prepared
for use on the farm.



Oronite Roof Paint

A high-quality protective coating for prepared roofing and metal roofs.

Mica Axle Grease

Gives a durable, smooth lubricating film under every pulling condition. Keeps the axle cool; no hot-boxes, no gumming. The MICA makes it better.

Eureka Harness Oil

Preserves the original strength and life of leather and keeps it soft and pliable. Keeps harness "new looking."

Standard Hand Separator Oil

Correct Lubrication for your Hand Separator, under the conditions of high speed and close fitting parts.



That old shingle roof—neglected—is a danger signal! It means the cost of repairs or even a new roof soon, unless you put it in good condition.

ORONITE SHINGLE OIL *Preserves Shingles*

Natural oils in the fibre of unprotected shingles soon evaporate from exposure to the hot sun. Cracking and warping of the shingles follow—and the roof begins to leak. Rain and wind penetrating the shingle fibre hasten disintegration and decay.

An application of Oronite Shingle Oil will help put your shingle roof in condition to stand up to the weather and give longer service to you. Oronite Shingle Oil is a high-quality preservative for all shingles—on roof or on side walls. It penetrates the shingle fibre with a moisture-resisting preservative. It retards evaporation of natural oils in the wood and counteracts the effect of age and exposure.

Oronite Shingle Oil will cover from 80 to 100 square feet of shingles per gallon, according to the age and condition of the shingles. It can be mixed with colors—ask our nearest agent for formulas. Use Oronite Shingle Oil on your roofs—now. It may save the cost of repairs or even an entire new roof next season.

STANDARD OIL COMPANY
*California)

ORONITE *means* **QUALITY**



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 XVI

AUGUST, 1921

NUMBER 2

FEATURES IN THIS ISSUE:

Spraying Methods to Improve Pest Control

BY LEROY CHILDS
Superintendent Hood River Experiment Station

Methods of Prune Drying in Oregon

BY RAY POWERS
*Commercial Dehydration Laboratory, Bureau of Chemistry
U. S. Department of Agriculture*

The Relative Value of Cover Crops

BY H. THORNBUR
Superintendent Horticultural Substation, Victor, Montana

Budding the Peach, Plum and Cherry

BY JOSEPH OSKAMP
Horticulturist, Missouri State Fruit Experiment Station

The Central Cooperative Marketing Plan

BY THE EDITOR



20c
the Single
Copy

Subscription One
Dollar per Year
in the United
States; Canada
and Foreign,
Including Postage,
Two Dollars,
Payable in
American Exchange

BETTER
FRUIT
PUBLISHING
COMPANY
PUBLISHERS
PORTLAND
OREGON

EFFICIENT DURABLE ECONOMICAL



Price **\$460.00** f. o. b. Portland—The Oldsmar Tractor

Especially Designed for Use in Orchards, Berry Fields and Orange Groves

Oldsmar Frost Protector

Absolute frost protection at a cost that is saved many times over through the prevention of damage during a single freeze.



Write for literature describing this crop insurance. Don't wait until frost comes, it's too late then.

Fruit growers and truck farmers through the Pacific Northwest as well as California and Florida are using hundreds of these tractors in the hardest kind of work, and they are proving every day that THE OLDSMAR is the "biggest small tractor and the smallest big tractor" on the market. More dependable than any horse or mule—and it eats only when it is working.

The price, \$460 f. o. b. Portland, puts this fine machine within the reach of all.

Being built low, THE OLDSMAR will not break or damage the overhanging branches of your trees or vines. The independent clutch in each wheel makes short, quick turns possible. The comfortable riding sulky makes play out of otherwise hard work.

THE OLDSMAR plows, harrows and prepares the seed bed, plants the seed, applies the fertilizer, cultivates the field, harvests the crop, hauls, loads and does the work of a stationary engine. In fact, it replaces the horse or mule entirely on the small farm. As a special introductory inducement, a \$20 plow will be given FREE with the first machine sold in each community.

Write today for literature and let us tell you how THE OLDSMAR will meet your particular requirements. Dealers, we have an attractive proposition to offer you.

O. V. BADLEY CO., *Distributors*

425 East Morrison Street, Portland, Oregon

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
LOS ANGELES HARBOR

AND

LONDON—LIVERPOOL—HULL—ROTTERDAM—AMSTERDAM—ANTWERP—
HAMBURG and HAVRE

From Pacific Coast Ports

Loading

From Europe

Loading

S. S. KINDERDYK Early August

S. S. NOORDERDYK Early August

S. S. MOERDYK Late August

S. S. EEMDYK Late August

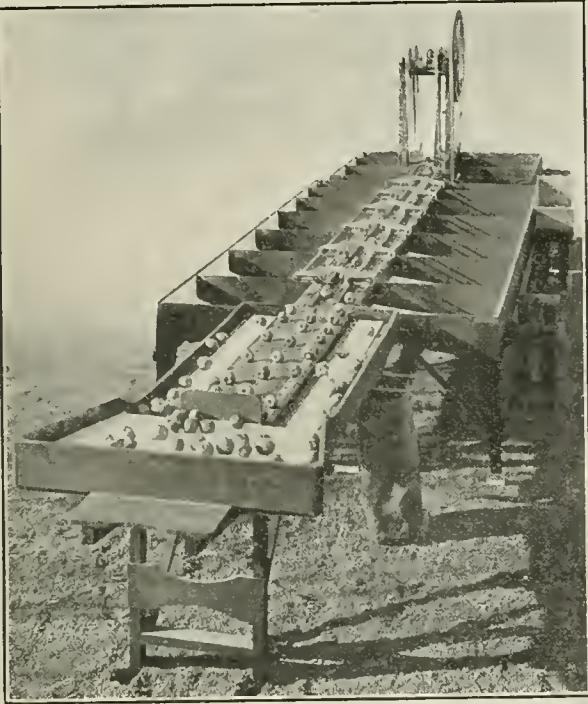
S. S. NOORDERDYK Late September

S. S. EEMDYK Early October

*All Steamers Equipped with Large Coolrooms and Refrigerators for the
Transportation of Fish, Fruit, Cheese and Other Perishable Cargo*

For freight rates and space apply:

Oregon-Pacific Co., 203 Wilcox Bldg., Portland, Oregon—Main 4565



Absolutely No Bruising of the Fruit by Using the Ideal Fruit Grader

It is built for two, three and four grades, and room for four, six, and eight sorters to work at one time. The machine can be adjusted while running in about one minute of time.

It is the most simple machine on the market, never gets out of order, as there are no complicated parts to get out of adjustment or break.

We have placed our new sorting table on this year's output which increases the amount of fruit that is packed per day.

It is noiseless in operation. Nothing to break, as the fruit is graded by coming in contact with elastic bands only.

We will be pleased to mail you our folders and prices of our several size machines upon application.

Our literature explains the working parts in detail, also shows several different views of the machine.

Ideal Fruit & Nursery Co.

HOOD RIVER, OREGON

Cables:
POUPART,
LONDON

Codes:
A B C
(5th Edition)
Marconi
International

Bankers:
Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.

T. J. POUPART

(John Poupart, William Ravenhill)

Convent Garden, London, W. C. 2

REGISTERED



TRADE MARK

The Largest Firm of Fruit Salesmen in Great Britain

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)
COMMISSION THE EXCLUSIVE BASIS (Purchase propositions cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

We are pleased to announce that we have arranged for Sam Birch to again visit all our shippers. Correspondence can be addressed to him in advance, care of "Better Fruit" office.

Members of

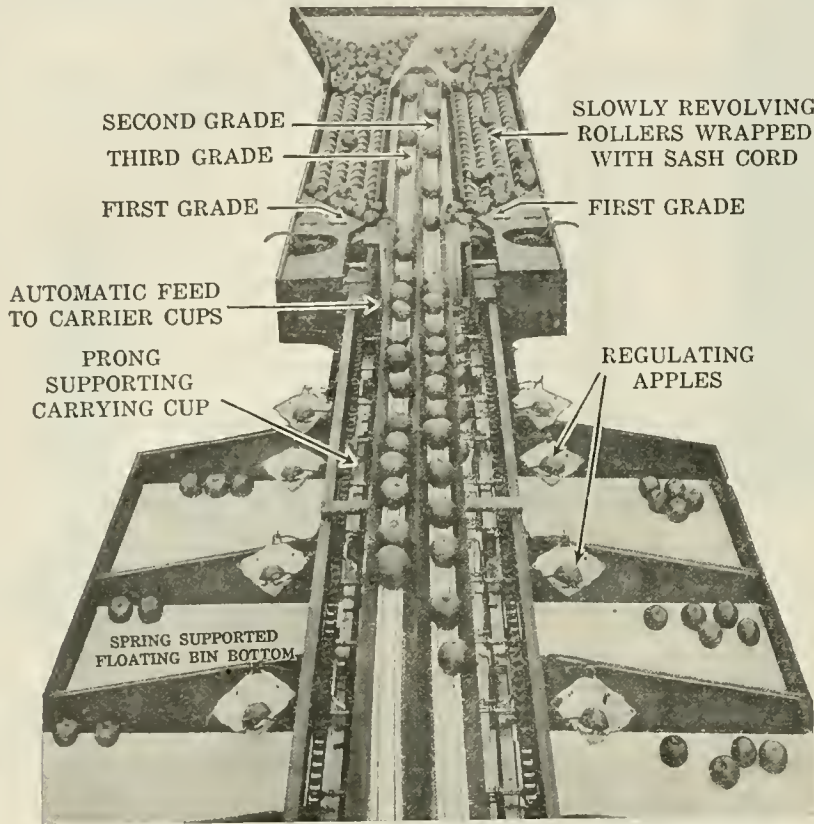


SPECIAL NOTICE

We have now opened a branch at Liverpool which will be conducted on the same lines as London. Growers can communicate direct with the manager,

T. J. POUPART
54 Stanley St.
LIVERPOOL

The Improved CUTLER "Two-Method" Mechanical Sorting Table—1921 Model



The sorting table is the most important part of any fruit grader. The Cutler "Two Method" Table is designed to handle your fruit efficiently whether the sorting is difficult due to some blemish or whether the fruit runs strong to the first grade.

You can change instantly from one method of sorting to the other or you can use the roller method on one side and the pick up method on the other.

Upper view of the 1921 Cutler "Two Method" Mechanical Sorting Table and a portion of the bins and Sizing Mechanism of a FOUR SECTION MODEL or of a BIG FOUR MODEL for Box Packing.

Eventually You Will Buy a Cutler Grader Why Not Now?

Fill out the coupon below and mail to us today. You may regret not doing so.

Orders are coming in rapidly and if you delay placing your order we may not be able to make delivery when you need the equipment.

Cutler Manufacturing Co.
353 East Tenth Street, Portland, Oregon

Please send me descriptive circulars and prices of the equipment as indicated below.

Check the equipment you are interested in.

.....GraderOff grade return belt attachment
.....Box PressCull Separation attachment
.....Grip Trucks	

Crop expected in 1921.....boxes

Name

Address

Box Presses

See the Cutler Press before buying. They will give you entire satisfaction and stand up under hard use. Fill out the coupon today for catalog and prices.

Cutler Manufacturing Company

353 East Tenth Street

Portland, Oregon

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, AUGUST, 1921

NUMBER 2

Spraying Methods to Improve Pest Control

By Leroy Childs, Superintendent Hood River Experiment Station of the Oregon Agricultural College

SPRAY, appliances, methods and equipment have passed through a rather rapid revolutionary process during the past few years. A very few years ago a two or three horse power sprayer was considered a "real outfit"—it was a long step forward when contrasted with the barrel pump outfit, but in reality this machine was a mere plaything when compared to our 10 and 15 horse power machines of today.

The development of the spray gun made necessary the production of much more power in order to produce and maintain sufficient pressure to operate the gun effectively. Just what is the ideal capacity and horsepower needed for the orchardist of moderate holdings has not been thoroughly established yet. It appears to the writer that some of our modern machines are over

supplied with horsepower for the amount of work that they are actually required to do while still others are being made decidedly under the needed capacity. It must be remembered that spraying with guns can not be properly accomplished with entire effectiveness unless applied with adequate power. An over supply of horsepower represents waste, not only in actual operation, but depreciation on horsepower not utilized. It must be remembered that this unused horsepower was paid for at the time of the purchase and wears out along with the power being actually used.

We are inclined to jump from one extreme to another in our enthusiasm; experience, however, brings about a balance which will work out in the case of sprayers of economical and efficient construction. The

requirements of an all around, effective machine for the orchardist of moderate holdings are probably not all understood at the present time, though these requirements are gradually assuming definite shape.

The only spray thrown from a spray gun that will meet all requirements in insect and disease control is one that is finely broken up, is misty, and not of coarse or stream-like consistency. Some insect pests and plant diseases may be controlled by applying a spray in coarse form—many can not be so controlled—all can be handled by a fine mist-like spray provided the outfit handles enough per minute and possesses sufficient power back of it to put this finely broken-up spray in all parts of the tree. Many small sprayers (two or three horsepower capacity) can maintain a pressure of 275-300



Two types of spray thrown from a gun. For close range work the broad fan-shaped spray should be employed. The tops may be covered by using the narrower form. Avoid drenching; this often occurs before the art of spraying is mastered.

pounds with two guns operating, provided the discs are cut down fine enough. However, in cutting down these openings the actual carrying properties of the spray is materially limited and as a result the tops of the trees suffer, especially so in sections inclined to be windy. Guns so equipped with fine discs are usually handling no more than 2½ gallons of spray per minute. This is an uneconomical unit, as the operator can use much more material satisfactorily and a spray of this nature is one with no "kick" behind it. If larger openings are used in the discs the spray from this small outfit becomes coarse and stream-like, due to limited pump capacity, and where employed is usually associated with very poor success with insect and disease control. At no time should more than one gun be used on a sprayer of this type.

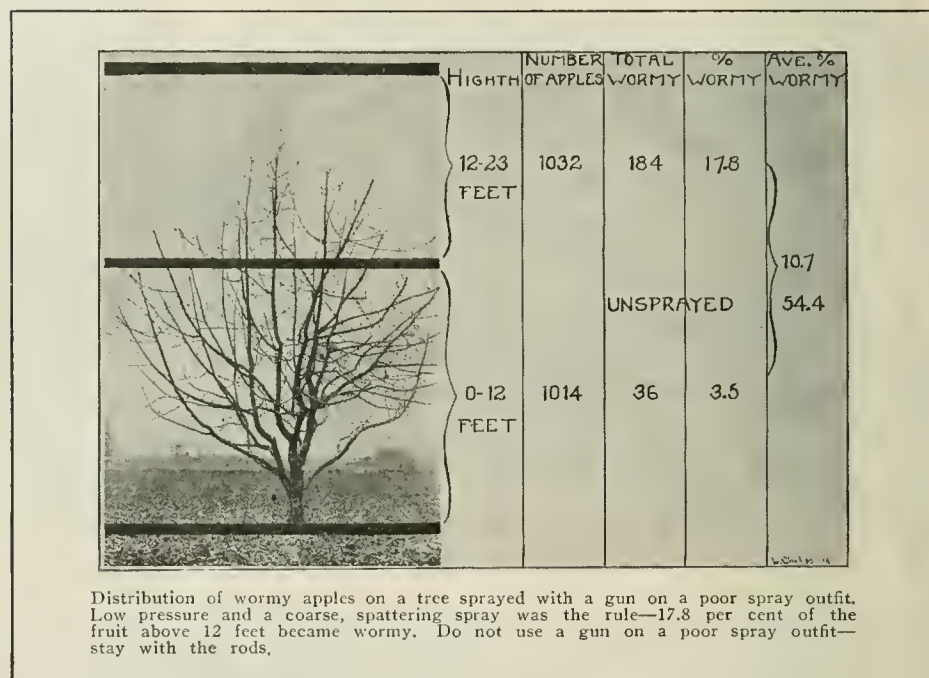
JUST what the economical unit to employ in the case of the output from the spray gun has not yet been definitely established. These requirements would probably vary in trees of different sizes; it being possible to use more spray per minute per gun with economy on very large trees than could be done on small trees. The writer's observations indicate that about 5 gallons per minute per gun at 300 to 325 pounds pressure is a unit that can be used to greatest advantage. Some growers have been noted using more spray than this per minute, but usually their operations are accompanied with considerable waste of material; 5 gallons per minute properly applied keeps a man busy, especially so with trees of moderate size. Nevertheless, much ground is being covered and very good work is being done.

As a general rule two guns to a machine are most often employed and are probably the most economical unit for the average orchardist to employ. In the case of very large trees the time will come in most orchards when some spraying will have to be done from the top of the rig in order that the upper portions of the trees may be thoroughly protected. Considering 5 gallons per minute from each gun as an average amount of material to use it can be seen that for ordinary usage the machine should handle 10 gallons per minute of material actually used. If more guns can be used economically in the orchard a proportionate pump capacity is needed. A sprayer should possess together with the normal peak output from the guns considerable reserve in the form of overflow. Just what added reserve is needed is a debated question at the present time, but from field experiences that have come to the attention of the writer it appears that a machine should pump at least 3 gallons more a minute than is actually required in operating the outfit. This gives a little leeway in the case of the engine or pumps not working properly. There are always times—at sometime during the spraying season—that this added re-

serve may be called upon to keep the spray operations going. In the case of a machine of little or no reserve above the actual requirements there is always a tendency to crowd the engine in order to get the spray needed to do good work. This usually results in a rapid depreciation of the machine and is invariably accompanied with successions of breakdowns. In the writer's opinion then, the machine constructed to pump 15 gallons per minute at a pressure of 300 pounds at least should prove to be an outfit of great effectiveness.

DOUBTLESS we shall see a great improvement in the many makes of sprayers during the next few years and it undoubtedly will be possible to choose a

Low pressure from these small capacity outfits does not produce a spray of the proper consistency to accomplish a satisfactory coating. The liquid leaves the guns in a coarse, spattering stream. There is no fineness of division of the particles and the only way that a tree can possibly be covered is to drench it, thereby wasting much material. Finely divided spray has much the same consistency as dust particles where dusting is employed and controls calyx worms and operates in the same manner as in the case of properly applied liquid solutions. If this spray is not broken up into a light drifting mist the principle of calyx-worm control is destroyed and poor results are bound to follow. There is no possible chance of obtaining much calyx protection



sprayer of more or less simple construction to fit the bill.

We all probably have seen the results obtained in orchards sprayed with guns used on small or inferior outfits. Invariably when so employed the gun has not given a good account of itself. A great many results have been tabulated at the Hood River branch of the Oregon Experiment Station and from these tabulations it is quite easy to show where the seat of the trouble originates. In checking up results in various insect and disease control work the fruits have been segregated at the different heights and their conditions noted. In the case of codling moth control, where spray guns are employed on poor outfits (which developed 175 to 200 pounds pressure) wormy apples developed from a height of 12 feet to the tops of the trees to the extent of 17.8 per cent, while but 3.5 per cent became wormy below 12 feet. There is only one explanation for this condition and that is the fact that the spray was not applied in the right form to the tops of the trees.

in the tops of the trees with a gun throwing coarse, spattering spray. This might possibly be accomplished from a tower. Gravity is the factor which allows the poison to reach the calyx end of the uppermost apples. The spray material must be placed there in the proper condition and in sufficient amounts to effect a coating as it falls. A coarse spray goes up in large droplets and comes down in much the same form and a large portion passes over the tree in the form of an arc. Unless a very excessive amount of spray material is thrown into the tops of the trees only a few of the calyx ends will receive the spray. Good control can be accomplished when the spray is applied in the proper form.

GROWERS who are having difficulty with their scab control are up against the same proposition. We know that the apple scab fungus attacks both the upper and under surfaces of the leaves as well as the fruit. Our experimental work has demonstrated that it is just as important to cover
(Concluded on page 20)

Methods of Prune Drying In Oregon

By Ray Powers, Commercial Dehydration Laboratory, Bureau of Chemistry,
U. S. Department of Agriculture

THE prune crop constitutes nearly sixty per cent of the total fruits grown within the lower Columbia and Willamette Valleys of Oregon. Italian and Petite prunes are grown in these regions, but the former comprise almost the entire acreage. However, Petite prunes are preferred by some evaporators and an attempt is being made to grow them on a large scale. Analyses of the Italian and Petite prunes follow:

*ITALIAN PRUNES				
Moisture	Invert Sugar	Cane Sugar	Acidity as SO ₃	Nitrogen
Pct.	Pct.	Pct.	Pct.	Pct.
25.75	45.31	8.38	1.4	0.47
26.80	46.03	3.80	1.0	0.375
26.80	41.93	2.51	1.4	0.46
24.10	50.00	5.30	1.0	0.419
27.60	34.47	3.20	1.2	0.355
24.95	48.94	2.08	1.1	0.34
24.25	42.30	5.96	1.0	0.355
32.20	40.84	2.51	1.2	0.39
19.65	37.20	8.29	1.4	0.42
21.50	37.20	4.60	1.4	0.37
<hr/>				
Av. 25.36	42.42	4.66	1.21	0.393
*PETITE PRUNES				
24.20	52.95	4.59	0.80	0.24
19.55	52.22	4.94	0.80	0.30
19.95	58.78	3.00	0.80	0.244
24.55	53.78	5.28	1.20	0.316
<hr/>				
Av. 22.06	54.42	4.45	0.90	0.275

*Analyses by The Oregon Agricultural College.

Most of the prunes from these districts are dried, but a small percentage reach the market in a fresh or green state. There would be a decided advantage in stabilizing the prune industry of Oregon if a larger portion could be marketed in the fresh condition. This problem, however, is rendered difficult because of the frequent rains and humid weather during the harvesting season. Prunes frequently split or crack during the rainy weather, and in this condition they are exceptionally susceptible to attacks by a fungus disease known as brown rot (*Sclerotinia fructigena*).

Both "splits" and brown rot which frequently occur together, were found in the 1920 season. The loss from these causes is estimated as 25 to 35 per cent of the crop, while a loss of 50 per cent is estimated as the total loss from all causes, if those prunes not harvested be included.

The season of 1920 differed from ordinary seasons in the fact that it was very humid and rainy, with the result that splitting of the fruit occurred frequently, followed by brown rot. Under these conditions drying was rendered difficult and costly, and the quality of the finished product averaged below the normal. To minimize these difficulties the prunes were usually graded during the harvesting and on arrival at the evaporator. They were then given the preparatory treatment and placed in the evaporator as rapidly as possible.

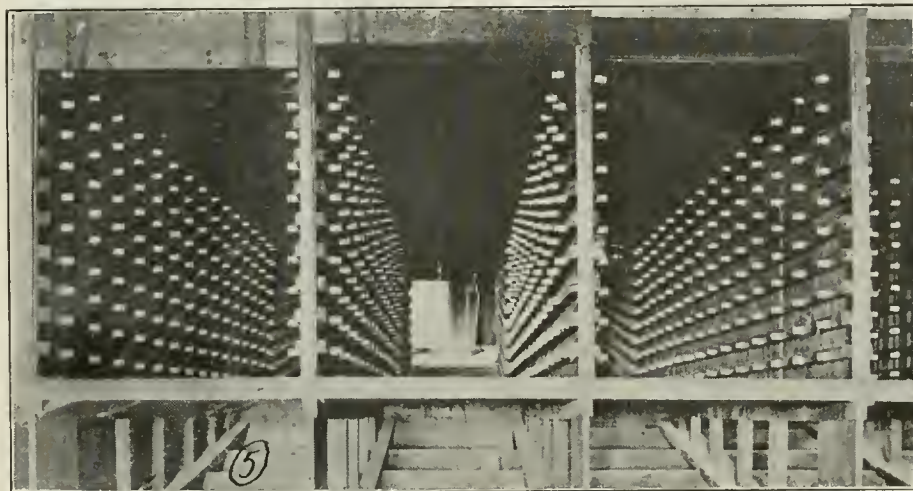
Prunes not only comprise the largest acreage within the lower Columbia and Willamette Valleys, but the season for harvesting, drying and marketing of the crop is exceedingly short, usually from 18 to 25 days. These conditions require and demand a drier of large capacity in order to

take care of the prune crop. An evaporator, after giving its season's use on prunes, frequently remains idle until the following season. It is natural under these conditions that the attention of prune growers should be turned toward the construction of an evaporator combining large capacity and output with inexpensiveness of construction.

The common style of natural draft drier is the revised Allen type now commonly known as the Oregon Tunnel Evaporator. This evaporator can be built with large capacity for a very reasonable cost and is, accordingly, in most popular demand among prune growers. The cost of a three tunnel

an opening within the floor of the drier at the end opposite the stack, and at the lowest point of the tunnel. The heated air passing through this opening is deflected over the fruit by staggering the trays containing the prunes in such a way that the top trays extend farthest out over the incoming air. The heated air after passing over and between the trays escapes through an opening at the top of the drier where it passes up the ventilator.

The rate of air circulation through the Oregon tunnel type driers was tested and found to range from 50 to 700 linear feet per minute at the point of intake within



LOOKING THROUGH THE TUNNELS OF AN EVAPORATOR

evaporator of the Oregon type, with a capacity of 3.5 tons of fresh prunes, is about \$3,000 to \$4,000 including furnace and trays.

THE Oregon drier may be briefly described as consisting of three or more tunnels usually 20 to 22 feet long, each tunnel being 30 to 36 inches wide (interior dimensions), inclined at a pitch varying from one to two inches to the foot in such a way that the highest part of the drier is at the exhaust or loading end. The tunnels are located over a cement or brick heating chamber within which a stove, usually of the hop type, is placed.

The products of combustion from the stove pass through a series of pipes, arranged back and forth across the heating chamber for radiating heat to the surrounding air before passing out at the stack. On each of the four sides of the heating chamber and near the bottom, holes are provided in the cement or brick walls to allow the entrance of air for heating and circulation. The sizes of the openings vary with the capacity of the drying chamber, but average 8 by 11 inches for the three tunnel type of drier.

The heated air from the furnace chamber is admitted to the drier above, through

the drier. The rate of air movement depends upon the outside conditions of temperature, humidity and air movement, the temperature to which the air is raised within the furnace chamber, the size and dimensions of the heating chamber and stove, and the openings for the admission of cold air into the heating chamber.

From observations on natural draft driers, during the season of 1920, there was found a common practice of partially closing the intake around the furnace chamber and also the ventilator, in order, it was stated, to "hold the heat." These methods are obviously faulty when it is recalled that heat without air circulation is practically useless in drying.

In all driers visited and where no objections were made to the contrary, the ventilators and openings around the furnace chambers were opened. The immediate results were to increase air movement and to require a slightly larger fire to heat the greater volume of air. The ultimate result was in most cases that of decreasing the drying time several hours. In one evaporator the air circulation was increased from 50 to 350 linear feet per minute by this method. Another drier reported a decrease in the drying time from 30-40 hours to 27-34 hours. The latter drying time could

doubtless be reduced still further by enlarging the ventilators and thus allowing a larger portion of the air capable of being taken into the drier to pass out. In a comparison of this type drier it has been observed that the height of the heating chambers varies from 7 to 16 feet, and that the higher chambers are usually accompanied by shorter drying periods.

The tunnels of one drier of the Oregon type were found to be inclined at a pitch of 3.5 inches to the foot, this being the greatest pitch of any drier visited. The air movement was tested by an anemometer and found to be 700 linear feet per minute at the point of intake. The drying time was stated as 20 to 24 hours.

Another drier depending upon natural draft is the stack type. This drier is used to some extent in this vicinity, but has been largely replaced by the tunnel drier. The drying chamber of the stack drier is usually divided into cabinets with cleats nailed to the sides which permits the use of trays for holding the fruit during drying. The heated air passes through the slatted floor, through the trays within the cabinets, and out through the ventilator at the top.

A FEW mechanical draft driers of the tunnel type are in use for the exclusive drying of prunes, but the forced draft driers are not generally considered economical of construction in this vicinity unless there are a variety of crops in the locality which lends themselves to drying. The reason for this is that a prune drier is used for only a very short period (18 to 25 days) in each year and the interest on the investment is too large for economic results.

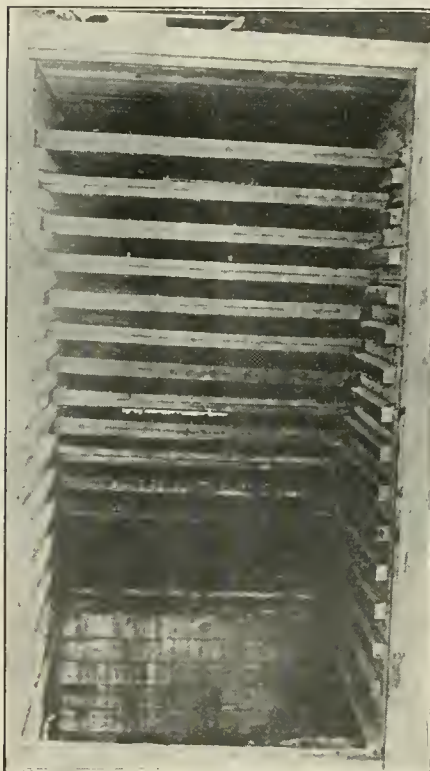
A mechanical draft drier located in the southern part of Oregon, and reported to give excellent results, is a modified Oregon tunnel. Vento heaters are placed on the lower floor through which the air is circulated by a 40-inch Sirocco fan. The heated air passes through the openings in the floor into the tunnels, being distributed by dampers placed even with the floor, which permit regulation. The used air passes out at the top through a ventilator as in the standard Oregon type drier except that arrangements are made for recirculating any portion of the air desired. Usually about 60 per cent of the air is recirculated.

Great differences of opinion are expressed among the growers concerning the question of dipping previous to drying. Some of the prunes are dipped in hot lye solution, some in boiling water, others in cold water, and some are dried without previous treatment of any kind. All of these prunes, however, are marketed at standard prices. The percentage of lye where used varies between 0.5 per cent and 1.5 per cent. The dipping is done in vats by hand methods in the smaller driers and by machines in plants handling considerable tonnage. The method of spraying the boiling lye solution onto the prunes is used to some extent with favorable results. In all cases where lye dipping is practiced,

this is followed by washing; in the smaller plants by means of wire baskets, and by means of chain conveyors passing through a tank of water, or by spraying in the larger plants.

The spraying of the lye solution followed by a spray washing seems to give more uniform results because all the prunes are subjected to equal treatment. Undoubtedly, if the prunes were graded before the treatment with lye, the value of the spray methods for lye treatment and washing would prove far superior to other practices in use at the present.

In some instances the prunes are run through a tank containing boiling water which is claimed by the operators of this method to give results equal to lye dip-



METHOD OF STAGGERING TRAYS OVER AIR INLET OR DRIER

ping, without the disadvantages. In some cases the prunes are merely run through cold water on a chain conveyor, or dipped into cold water by wire baskets, the operators of this system claiming that no advantage is to be gained by the use of lye or boiling water. In a few instances the prunes are not dipped into any solution previous to drying, but it can be said that these instances are few.

The cost per pound to dry prunes in the Oregon type drier varies considerably as the figures are presented by different plants. The range of costs as given lies between one-half and two and one-half cents per pound. A great deal of variation may be accounted for in the factory methods of handling, the kind of fuel used, and the construction of drier and heating chamber. The average figure taken from actual observations, where satisfactory factory methods are employed, is $1\frac{1}{4}$ to $1\frac{3}{4}$

cents per dry pound exclusive of investment and depreciation.

The fuel used in this vicinity is almost entirely wood since this may be obtained nearby in sufficient quantities and at a price which makes its use less expensive than coal. The price per cord varies with the kind of wood, ranging between 5 and 8 dollars per cord for the year 1920. It is estimated that between one and two cords of wood are required to dry one dry ton of prunes, with the drying time averaging from 20 to 25 hours.

The degree of heat employed to dry prunes is another factor of wide variation. Temperature from 150 degrees Fahrenheit to 195 degrees have been observed. Those using the lower temperature claim the prunes will scorch above 155 degrees, while those using the higher temperature claim no scorching at the higher temperatures. Probably not over 170 degrees as the highest limit should be used for prune drying, and 160 degrees of heat would be a safer margin in order to prevent scorching or caramelization of the sugars.

Observations of humidities proved that in all driers of the Oregon type that were tested, the relative humidity was always below 10 per cent at the intake, and from 11 to 27 per cent at the ventilator. In the Oregon type drier installed at the Oregon Agricultural College, an attempt was made to increase the initial humidity of the incoming air by cementing off about one-fourth of the floor of the heating chamber by a wall six inches high, and filling this space with water. Although the water evaporated rapidly, the relative humidity was not raised above 10 per cent.

From these observations it would appear desirable:

(1) To change the design of the driers in order to give more rapid circulation of air by enlarging the size of the ventilators and increasing the pitch of the tunnel from 2-3 inches to the foot.

(2) To secure greater circulation and greater heat transmission by (a) increasing the height of the furnace chamber and (b) increasing the radiating surfaces within the furnace chamber. The latter may be done by supplying more lengths of flue pipe within the chamber in order to remove a greater amount of the heat from the flue gases before passing out at the stack.

(3) To aid circulation by increasing the number of holes around the furnace chamber. This will necessitate increasing the fire correspondingly in order to heat the greater volume of admitted air to the desired temperature.

(4) To admit air on all four sides of the furnace chamber in order to obtain equal distribution of air within the tunnels. This practice is followed in single unit driers and may be followed in multiple unit driers by constructing the heating chambers with a space between them of about one foot, in order to provide for the necessary

(Concluded on page 21)

The Relative Values of Cover Crops

By H. Thornber, Superintendent Horticultural Substation, Victor, Montana

THE problem of maintaining the fertility of the soil has always been of great importance. It is the history of every farming district, that sooner or later, something has to be done to replace what was removed from the soil by the crops, or the yields would decrease until farming became unprofitable if not impossible. The Bitter Root Valley is no exception in this respect. The Montana Experiment Station, realizing that the soils of the valley would need something to maintain their fertility, planned an orchard cultural test in 1908, when the Sub-station was started. This test was first planned to determine the relative value of clover and peas as cover crops as compared with clean cultivation and inter-cropping with a cultivated crop of potatoes. After eight years it was very evident that continuous clean cultivation and continuous inter-cropping with potatoes were not the proper methods of orchard cultivation, and in order to save the trees from premature death the methods employed on these two plots were changed as mentioned in a recent bulletin and also in my paper read at the last annual meeting of the state horticultural society and published in *Better Fruit*, of which this paper is a continuation.

In the beginning a five-acre area was divided into five one-acre plots. Cross-ways of these plots were four rows of each of the following varieties: McIntosh Red, Rome Beauty, Alexander and Wealthy. By this arrangement a certain number of trees of each variety were planted in each plot. Unfortunately fire blight destroyed all the Alexander and most of the Wealthy early in the experiment, leaving only the McIntosh and Rome Beauty.

At the end of eight years when continuous clean cultivation and inter-cropping with a cultivated inter-crop were found to be injurious to the trees these two plots were changed to peas with manure, and clover with one cutting removed for feed the second year. As the experiment now stands, and has been running for five years, we have as follows:

Plot 1. Clover two years, one crop removed for hay; second crop plowed under.

Plot 2. Clover two years, no growth removed, and plowed in fall.

Plot 3. Clover two years, all growth removed, then plowed in fall.

Plot 4. Peas two years with all growth plowed under.

Plot 5. Peas two years plus manure and all plowed under.

The year following the two years of cover crops all the plots are clean cultivated to get rid of the weeds, then the same rotation is started again. As will be noticed this gives one plot with no clover growth removed, one with one cutting removed and one with all growth removed.

The two plots in peas are treated the same with the exception that one plot receives eight loads of manure per acre to each crop of peas plowed under.

The chemical analysis of the soil from the different plots show that the most nitrogen has been added where no clover growth was removed, the next greatest amount where only one crop of clover was removed, and the least where all growth was removed. With the peas the addition of nitrogen was also greater on the plot which received the manure. While the chemical analyses are of value, the growth of the trees and the yield of fruit are perhaps of greater interest from a practical standpoint.

The following table shows the average heights and diameters of the trees in the different plots, and the average annual yield per tree for the last four years.

Plot	Variety	Average Height feet	Av. yield per tree for 4 yrs.	
			Average Diam. inches	pounds
1	McIntosh Red.....	12.7	6.00	121
	Rome Beauty.....	12.0	5.99	55
2	McIntosh Red.....	13.6	6.61	102
	Rome Beauty.....	12.1	5.98	50
3	McIntosh Red.....	12.2	5.69	64
	Rome Beauty.....	11.4	5.33	50
4	McIntosh Red.....	10.6	5.25	48
	Rome Beauty.....	11.5	5.53	33
5	McIntosh Red.....	11.3	5.59	40
	Rome Beauty.....	11.1	5.45	8

WHILE the above table does not show a great difference in the average height and diameter of the trees on the various plots, one must actually see the trees to appreciate the difference. For example, an average tree on plot four, which may be only eighteen inches shorter and have a diameter of only one inch less than an average one on plot two, may have a spread of branches of only eleven feet, while the other has a spread of nineteen feet. Pruning undoubtedly has done much to equalize the height and a stunted tree often has a trunk out of proportion to its size.

The growth of the McIntosh Red trees, as shown by the above table, is in the order of plots 2, 1, 3, 5 and 4. The diameter of the Rome Beauty trees is in the order of plots 1, 2, 4, 5 and 3, and the height in the order of plots 2, 1, 4, 3 and 5. Generally speaking, the trees on all the plots except plot four, have made a satisfactory growth under the present methods of culture. Those on plot four have made the least growth and have produced more small apples than the other four plots combined.

The yields of the different plots during the past four years indicate the value of the various methods of culture. While one might conclude that the average yield per tree is low in all cases, the station records show that severe frosts during the two years

1918 and 1919 cut down the yield of the McIntosh Red slightly over 68 per cent as compared with the 1917 and 1920 yields. The Rome Beauty trees, although twelve years old, have just commenced to bear, after having lost practically all their fruit spurs up to 1918 by fire blight in the blossoms. Plot five, which shows the least yield per tree, cannot be considered a test, because it was clean cultivated for eight years, and, as Bulletin 114 shows, the trees were nearly ruined by "rosette," which is generally conceded to be the result of malnutrition, and was caused by continuous clean cultivation. The trees are recovering very rapidly and satisfactory yields are expected in the next few years.

FROM observations made on the soil during the past three years, that of plots one and two is in the best physical condition. The soil on plot five has improved rapidly during the three years of plowing under peas and manure while the soil on plots three and four is inclined to bake when wet and shows distinctly it could be improved by the addition of more vegetable matter. Evidently plowing under peas alone does not add as much vegetable matter as does the clover, although the bulk appears to be considerable. The plot in clover where all the growth is removed demonstrates that the orchard is not the place to grow hay. Hay and apples are not good companion crops, and sooner or later the apples will fail.

The common and almost universal reason for not growing a cover-crop in the orchard is because of the expense. However, it is pointed out in Bulletin 114 that clean cultivation is actually more expensive than where a cover crop is used. While clover is usually considered more expensive than peas, probably on account of the cost of the seed, it is the cheaper crop to use. Our records show that while the clover seed costs \$8.40, or 70 cents per pound, which is an unusual price, the pea seed costs \$5.00, or 5 cents per pound, and must be sown each year, while the clover is good for two years. This means plowing twice, preparing the seed bed twice, seeding twice, and marking for irrigation twice, etc., for the peas, but only once for the clover. Besides where one crop of clover was removed the hay, about one ton, was worth (1919 prices considered) the total of all the costs of the clover. However, we do not feel that over one cutting should be removed—better not any until the soil is well supplied with nitrogen and humus. The actual difference between the costs of the clover and peas as cover crops was for the two years, \$11.00 per acre in favor of the clover. The peas cost \$33.20 and the clover \$22.20 per acre.

Budding the Peach, Plum and Cherry

By Joseph Oskamp, Horticulturist Missouri State Fruit Experiment Station

BUDDING is commonly resorted to in the propagation of peaches, plums and cherries, although apples may be budded with good success. The work is done during July, August or September when the bark will peel or readily separate from the wood. Where the growing season is early it is possible to bud earlier in the summer. Buds inserted in the late summer unite with the stock, but no growth takes place until the following spring, when the stock is cut off just above the bud and all the growth forced into the desired bud.

A very much larger percentage of buds can be expected to grow if they are inserted in wood that grew the same season that the budding is done, although buds will grow in older wood. If trees are grown from the seed, apple trees may sometimes be too small for budding the first season, in which case they can be cut back to the ground and the new sprouts budded the following summer.

In the case of the stone fruits the budding is done as near the ground as it is convenient to work, usually two or three inches from the surface of the soil. Apples are budded at about the height that it is wished to start the head, or the buds are even set in the lateral branches when it is the desire to use a hardy stock which is not susceptible to disease or winter injury.

The buds are procured from the twigs of the current season's growth of the variety to be propagated and these twigs are known as "budding sticks." The buds are less well developed on the ends of these sticks and therefore the three or four inches of terminal growth is cut off.

The first step in budding is to make a longitudinal slit in the bark of the stock or seedling tree at the desired point and at the upper end of this slit a cut crosswise is made thus forming a letter "T" in the bark at the point where the two cuts meet. The bark at the intersection is gently raised with the point of a knife and the two ends are rolled back so that the bud can be inserted. The bud is cut from the "budding stick" by slipping the knife blade through the bark from beneath the bud upward to a point about a sixteenth of an inch above the bud. The knife is withdrawn and a crosswise cut severs the bud from the stick. For convenience in inserting, it is well to leave a portion of the leaf stem on each bud when cutting off the leaves from the budding stick. The flaps are opened as suggested and holding the bud by the short leaf stem, it is forced from above downward until the square end of the patch of bark bearing the bud comes down to a point where it fits the crosswise cut made in the seedling tree. The bud is now ready for tying. Nurserymen frequently use carpet

string for this purpose. Starting to wind the string at the bottom of the bud, bring the end up in such a manner that it will catch beneath the wound string, so that no knot is necessary and proceeding until the string covers practically the entire cut area, except only a small portion of the bud and adhering stem. The top end is secured in a loop so as to hold the twine in place. It will be necessary to examine the buds within ten days from the time of wrapping because the young trees are growing at this time and the string soon begins to bind and choke. The string is cut by running the blade of a sharp knife through it lengthwise of the seedling on the opposite side from which the bud is inserted.

Peach, plum or cherry seedlings can be purchased from nurserymen or the seeds from the family orchard may be planted and the seedlings grown in which to set the buds. Peach seeds should be allowed to freeze during the winter by placing in sand or dirt out of doors where they may become well soaked by rain and snow. The pits are planted out in the spring. Plum seeds are treated in the same manner. Cherry seeds should not be allowed to dry out, as they will then sprout with great difficulty. Seed from the common varieties of plums and cherries may be used for growing seedlings, but the more desirable stocks used by nurserymen for this purpose are the Myrobolan and Marianna plums and Mahaleb and Mazzard cherries.

The Value of Topping Strawberry Plants

By Gordon G. Brown, Horticulturist Hood River Experiment Station

NOW that the strawberry harvest is over it is well that the grower lay plans for the most important factors connected with the care of such plants for the remainder of the season.

Topping of plants and fertilizing now command attention because upon the manner in which this is done depends results for next year. It is well to keep in mind that sturdy, thrifty plants only will pay and that stunted plants as a rule are a liability rather than an asset.

The writer has been conducting a number of experiments during the past two years with reference to the best time to top plants. The customary practice is to allow from two to four weeks to elapse after harvesting before doing this work. A common conception is that the plants require a "rest" and that they will do better when so handled. During the two or four weeks mentioned the plant remains somewhat inactive until topping is done. Then new leaves are thrown out rapidly. Experiment station records favor topping both in point of yields, size of fruit, vigor of plants and practical economy in cultivation. When the tops are not removed it is quite difficult to hoe around the plants thoroughly and economically.

The main consideration is the question of the best time to top. Shall we wait two weeks or a month before doing this? Apparently there is little to support the delay. The old leaves have practically ceased to function. Obviously, more plant food cannot be stored up until new leaves are present to manufacture this; neither will a new vigorous root system be developed. In two tests bearing upon this problem the results for 1920 and 1921 support this view. The fruit from plants thus handled was

larger both in size and yield. Five year old plants that were not topped were less vigorous than the plants which were topped. The crowns, as a rule, were smaller and supported leaves of smaller size than topped plants. The tests, as suggested have been running only two years, but preliminary results favor early topping.

Dynamite Improvement

THE announcement is made that the DuPont Powder Company has perfected a formula for the manufacture of straight dynamite which results in that explosive being proof against freezing even in zero temperatures. As a consequence of this development, the company has determined to discontinue the manufacture of its former straight dynamite and hereafter all this kind of explosive will be made by the new low freezing method. Straight dynamite has for years been the standard of the world in nearly every kind of open work, but a disadvantage has been its liability to freeze at temperatures below fifty degrees Fahrenheit.

As any dynamite loses some part, if not all, of its efficiency when chilled or frozen, many attempts have been made to make it low-freezing. The perfection of the new "powder" by the Du Pont company makes it possible to use straight dynamite the year round in industrial operations. Thawing, with its loss of time and attendant dangers, has practically been eliminated. The new explosive has been fully tested and proved and the formula for making it has been made standard in all the plants of the company producing dynamite.

Packing Fancy Northwest Peaches

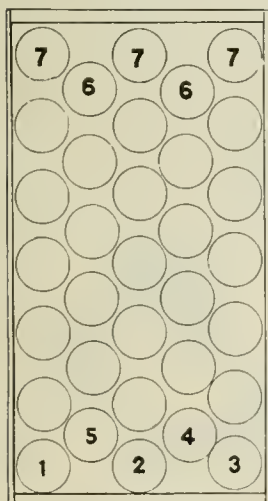
THE various varieties of peaches should be picked at different stages of ripeness, as weather conditions will modify the time to some extent of picking even one variety. Peaches should not be picked when they are green, as the green peach is neither a good shipper or a good keeper. To ship and keep best the peach should be "just ripe."

In picking, pick with the hands and not with the fingers. That is, the peach should be grasped gently but firmly in the hand and removed in a method that will not bruise it. Not a mark should be left on even the ripest peach and they should not be poured from basket to box, but should be handled like eggs.

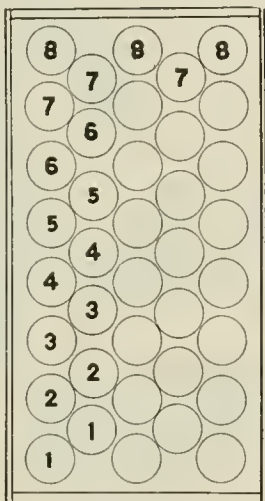
A well lighted and well ventilated part of the packing room should be selected for packing peaches, so that the packer may easily see and lay aside any damaged fruit that passes the sorters. It is well for each

packer to have room for two boxes so that two grades can be run at the same time. The end of the boxes farthest away from the packer should be raised about six inches. Benches placed behind the packers to set the packed boxes on until they are nailed and placed in piles should be provided. Peaches should never be packed when they are warm and the greatest care should be used in handling and hauling them for shipment. The pack should be uniform and the fruit absolutely free from blemishes and fungus, and properly matured. The pack, to secure the best results in shipping, must be tight and up to, but not above the end of the box. The sizes of the boxes most largely used for peach packing in the Northwest are 18 inches long, 11½ inches wide and 4 inches deep, and 18 inches long, 11½ inches wide and 4½ inches deep.

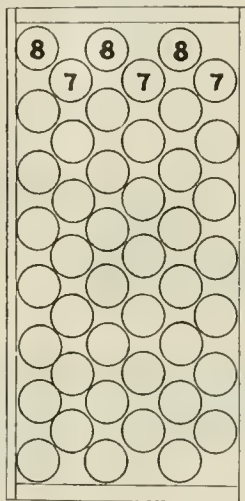
Below will be found diagrams showing methods for putting up fancy peach packs:



65—EXTRA FANCY
3-2 (7-6) PACK



75—FANCY
3-2 (8-7) PACK



90—CHOICE
3-3 (8-7) PACK

Interesting and Valuable Topics Discussed

THE summer meeting of the Washington State Horticultural Association which was held at Yakima, July 21 and 22 brought out an unusually large attendance and the discussion of a number of interesting and valuable topics to the fruitgrower.

One of these topics was in regard to the value of oil paper as a fruit wrap, a subject that was handled by D. F. Fisher, plant pathologist with the United States Department of Agriculture, whose experiments led to the discovery of the great advantages of this new wrapping material. Apples wrapped with the oil paper were exhibited by Mr. Fisher that had been left in a room with ordinary ventilation and temperature, that appeared almost as fresh as when packed. While apples wrapped in the ordinary wrapping paper and held in storage

for the same length of time which were exhibited, were badly decayed.

Next to the importance of the oil wraps being a great fruit saver was the statement of Mr. Fisher that it costs only 3 cents a box more to use the oil paper.

In discussing the subject of cover crops Roy Larsen, soil specialist of the Wenatchee Experiment Station, strongly advocated leaving orchards covered with vegetation and even condemned the cutting of alfalfa planted in orchards as inimical to the best soil conditions for fruit trees. In supporting his views he referred to the Wenatchee district where growers he said had virtually abandoned clean cultivation and yet were producing larger yields of apples than formerly.

R. J. Newcomer, of Yakima talked on the value of the calyx spray while Dr. A. L. Melander of Washington State College, spoke interestingly on the methods of combatting the leaf roller. P. S. Darlington, horticultural inspector, discussed collar or crown rot and C. DeVere talked on the

development of water transportation.

As an outcome of the prevalence of collar rot in the Yakima valley the association made a unanimous request to the United States Agricultural Department to send an expert to Yakima to study this disease. Owing to the keen interest in the meeting this year, M. L. Dean secretary of the association announced that next year Wenatchee and Yakima would each have a two day session of the association.

Procedure to Protect Oregon Apples

A PROCEDURE to protect the reputation of Oregon apples for excellence that will interest the fruit growers and shippers of the Northwest has just been instituted by the Federal Trade Commission. Upon an application for the issuance of a complaint the Federal Trade Commission, as required by law, has cited the Caravel Company, Inc., an exporting company in New York City, to appear before it on a charge of unfair competition in foreign commerce.

The complaint recites that in the State of Oregon certain apples are grown which have become well known as "Oregon Newtown Pippins" and which have acquired a reputation of superiority for shipping and keeping qualities for export purposes.

The complaint further recites that in response to an order from Aktiegolaget Halfdan Buhrman, an apple dealer in Stockholm, Sweden, for "Oregon Newtown Pippin" apples, the Caravel Company shipped to this firm 2,000 boxes of other apples with the knowledge that these apples were not the Oregon apples ordered, invoiced the apples as "Oregon Newtown Pippins," and received for the shipment the higher price commanded by Oregon apples. When the shipment arrived, the apples were spoiled.

The commission avers that this conduct has the capacity and tendency and does injure the business of other apple growers exporting apples from the several states who maintain selling grades, and discredits in foreign markets the good name and business reputation of competing American exporters and of American products.

Complaint is filed by the commission after preliminary informal inquiry made upon the suggestion of the Department of Commerce. The filing of the complaint and the citing of the Caravel Company to appear and make answer initiates a proceeding to try out in a formal way the questions raised by the complaint, this including the examination of witnesses under oath and introduction of testimony on both sides. The hearings will commence on August 31, or a date to be later announced.

Now is a good time to make a survey of your apple and pear harvesting equipment. Don't wait until it is time to pick the fruit.

The Central Cooperative Marketing Plan

By The Editor

FROM present indications the long sought for and desired central co-operative organization to assist in the marketing of box apples grown in the Pacific Northwest states may be realized. Although no definite information has been given out as to when the organization will materialize members of the committee who were appointed at the marketing conference attended by representatives of the six Pacific Northwest states and held in Portland, July 11, 12 and 13, say that the outlook for such an organization is very favorable. With this in view it is expected that the organization will be formed some time during the early part of the new year.

However, whether the proposed central marketing organization materializes or not there is no mistaking the fact that the representatives of the various co-operative box apple handling associations in the Northwest are thoroughly in earnest in securing at the least a close working agreement that should greatly benefit the industry as a whole. While the concrete results accomplished at the big meeting held in Portland do not loom very large on paper the interests and influences brought together put this important element of the fruit business in much closer touch than it ever has been and seemingly clinched the long entertained idea that it is only by amalgamating their interests that the apple and other deciduous fruitgrowers of the Northwest can attain the greatest degree of success.

Held under the auspices of the Farm Bureaus of the Northwest the meeting was made notable by an absence of conflict which so frequently characterizes such gatherings, with the result that such action as was taken was constructive and progressive. The need for an organization to han-

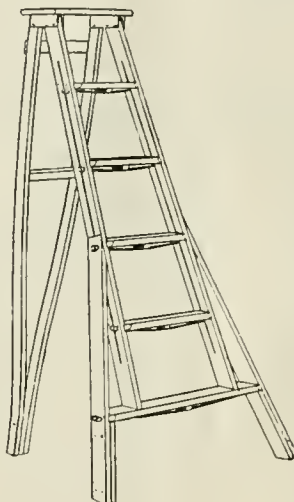
dle the combined box apple output of the Northwest was recognized and approved; a committee was appointed to devise a nationwide advertising campaign and a resolution adopted opposing haphazard methods of legislation in connection with the fruit in-

dustry. The direct aim of the resolution is to have all contemplated legislation approved by all of the various organizations which will compose the central body before it is submitted for action.

The committee appointed to perfect an advertising plan is a representative one, being composed of J. A. Warman, manager of the Skookum Packers' Association of Yakima; Dwight L. Woodruff, manager of the

A Dependable Ladder

Made of clear well seasoned spruce, it is light and strong.



THE HARDIE

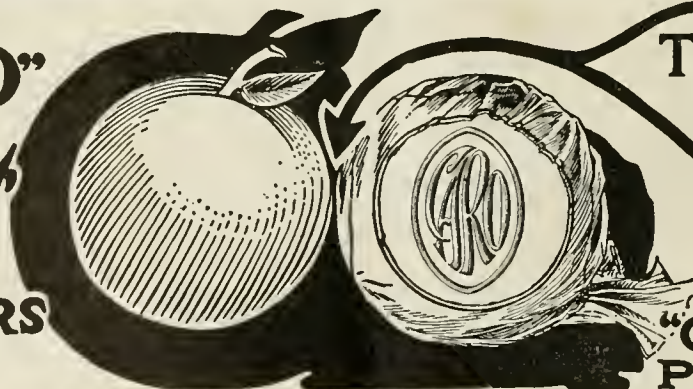
Designed especially for orchard work with wide spreading side legs and a rod reinforcement under each step. This strong, rigid construction gives your picker confidence and a wider range of picking. Its use soon saves its cost. Hardie ladders and other orchard devices are fully described in our free catalog, which is mailed on request.

The Hardie Manufacturing Co.

55 N. Front Street

Portland, Oregon

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Wenatchee District Co-operative Association; C. I. Lewis, assistant manager of the Oregon Growers' Co-operative Association; C. H. Swigert, manager of the Yakima Fruitgrowers' Association, and A. W. Stone, general manager of the Hood River Apple Growers' Association.

Incidentally an important development in connection with the meeting was the promise of the Portland Dock Commission to the representatives of the Northwest co-operative associations that it would establish a municipal cold storage plant on the city terminal docks to care for shipments of fruit and other perishables by water. With a municipal cold storage plant on the docks in Seattle and one established in Portland the fruit growers of the Northwest will be well provided with land terminals for using water transportation.

The general outlook for the organization of the proposed central co-operative marketing body in the near future seems bright and another year should see it in successful operation.

Liming the Orchard

LIME is a healthful adjunct in the orchard for either the cover crop or grass mulch system of management. In either case, a good growth of crop is desired to supply adequate amounts of organic matter and nitrogen to the soil and better to protect the soil against injury from erosion.

For a cover crop, legumes are generally employed, and, being sensitive to lime-deficiency, they respond to liming on acid soils. When plowed down or disked into the ground, their decay is promoted and regulated by lime. The better decomposition thus fostered provides assimilable nitrate for the fruit tree.



Northwest Orchard Ladders

"The Quality Line"

For Sale by
Leading Dealers Everywhere

Northwest Fence and Wire Works
PORTLAND, OREGON

Spreado

THE PERFECT SPREADER

Ready for use. Simply stir into the spray solution



Arsenate of Lead
No Spreader.

"SPREADO" produces a uniform coating, completely protecting the fruit.

"SPREADO" increases the adhesiveness of the spray, especially desirable in rainy sections.

"SPREADO" increases the wetting and covering power of the spray, more than paying for itself in the saving of spray material.

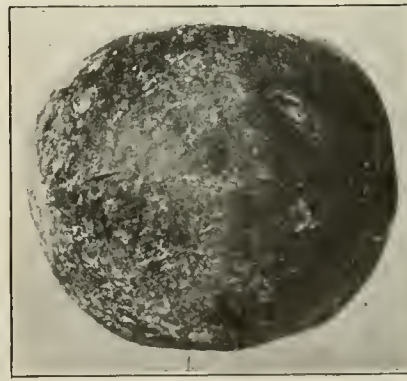
"SPREADO" does not in any way injure the foliage or the fruit.

"SPREADO" is highly recommended as a spreader by the Oregon Agricultural Experiment Station.

DIRECTIONS

When filling the tank start agitator, sift in gradually the required amount of "SPREADO" keeping the agitator in motion until the tank is filled and spraying is begun.

"SPREADO" is especially recommended for use with arsenate of lead for the cover sprays in the proportion of 5 to 6 lbs. of powdered arsenate of lead with 2 lbs. of "SPREADO" to the 200 gallon tank.



Arsenate of Lead
With "Spreado."

NOW Is the Time **"SPREADO"**
You Need

Manufactured by

Miller Products Company

PORTLAND OREGON
GRANTS PASS, OREGON

Sold by

Oregon Growers' Co-operative Association
Salem, Sheridan, Roseburg and Medford, Oregon
Eugene Fruit Growers' Association
Eugene, Creswell and Junction City, Oregon
Hood River Apple Growers' Association
Hood River, Oregon

Annual Conference of Horticulturists

HORTICULTURISTS, entomologists and plant pathologists of the Northwest and British Columbia held an important series of meetings at Hood River, Oregon, July 26 to 29, when they gathered for their fourth annual conference.

The conference was held under the direction of W. S. Brown, chief of the Division of Horticulture of the Oregon Agricultural College and was attended by 30 to 40 experts. Containing a list of important problems that are confronting the fruitgrowers and farmers of the Northwest the program brought out information and discussions that proved highly valuable to all present. The various colleges and experiment stations in Oregon, Washington, Idaho, Utah and British Columbia were represented and the comparative data secured on some of the foremost questions considered will lead, it is expected, to an improvement in a number of the methods employed in fruit culture.

An interesting phase of the conference were a number of demonstrations conducted in Hood River orchards by Gordon G. Brown and Leroy Childs of the Hood River Experiment Station. Social features were a dinner at the Columbia Gorge Hotel an automobile tour of the valley and a visit to Cloud Cap Inn, where 20 of the party remained over night and made the ascent of Mt. Hood in the morning.

At the close of the meeting it was decided to formally organize a body to be known as the Northwestern Association of Horticulturists, Plant Pathologists and Entomologists. Professor O. M. Morris of the Washington State College was elected president, and a vice-president and secretary-treasurer will be elected later. It is the plan to have each of the three sciences represented by an officer.

An AppleBook of Notable Interest

"**T**HE Commercial Apple Industry of North America," is the title of a new book by J. C. Folger, assistant secretary International Apple Shippers' Association, and S. M. Thompson, formerly fruit crop specialist, U. S. Department of Agriculture. Professor Brown of O. A. C., has reviewed the book and considers it very good—"one of the most up-to-date books on the subject," is his comment.

In collecting material for this work, the authors have visited practically every important apple-growing country in the United States; first in connection with a special investigation of the cost of producing apples in important regions, conducted by the office of farm management, U. S. Department of Agriculture; and later as fruit crop specialists engaged in organizing a system for estimating the commercial apple crop of the United States.

The scope of the book is a wide one covering every phase of apple growing, handling and marketing, and *Better Fruit* recommends it to those seeking a volume containing information of this character.

The state of Washington supplied more than half of the country's box apples in 1920.

Worth Many Dollars

LEWISTON VALLEY WATER Co.
Lewiston Orchards

Lewiston, Idaho, June 21, 1921.

Better Fruit Publishing Co.,
Portland, Oregon.
Gentlemen:—

I have before me the June copy of Better Fruit. I wish that every fruit grower in the Northwest could read this issue.

You will find inclosed a list of the fruit growers on the Lewiston Orchards. I hope you will be able to mail each one a copy of the June number. This one issue is worth many dollars to any fruit grower.

Yours truly,

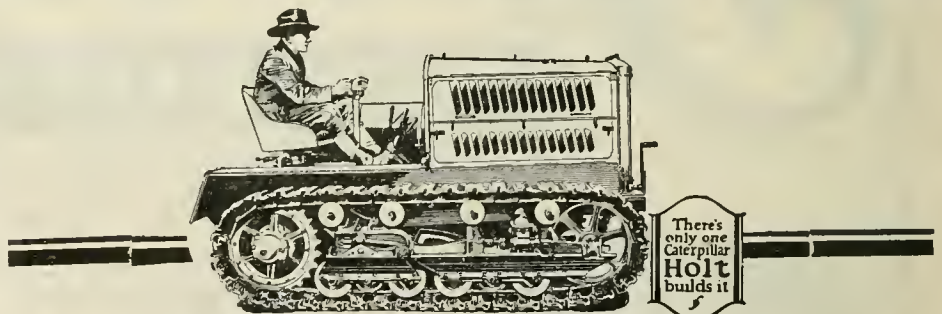
(Signed) DAVIS S. WALLACE,
Manager

**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.



There's
only one
Caterpillar
Holt
builds it

Dependability

the
dominating feature
of "Caterpillar" Tractors

The HOLT

MANUFACTURING COMPANY

Stockton, California

Peoria, Illinois

Los Angeles, Cal.

Spokane, Wash.

San Francisco, Cal.

American Apples In China

FROM a bulletin just issued by the United States Department of Agriculture it is interesting to learn that the market for the apples of the Northwest in China is more susceptible of expansion than for other fruits. The varieties that meet with the most favor in China are the Yellow Newtown, Spitzenberg and Winesap and the grade that is said to be best suited to the trade is a fancy or No. 2, although an extra fancy is wanted in limited quantities for the Christmas trade. The sizes that are the most popular with the trade run from 120 to 163, but both larger and smaller sizes have reasonable demand and sale. The largest quantity of apples sent to China from the United States in any one year was approximately 40 carloads. American apples are sold in China by the pound and retail at \$5 to \$6 a box.

Get ready for the campaign against anthracnose in your apple trees. Remember that a clean crop next year depends on the thoroughness with which you spray this fall.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

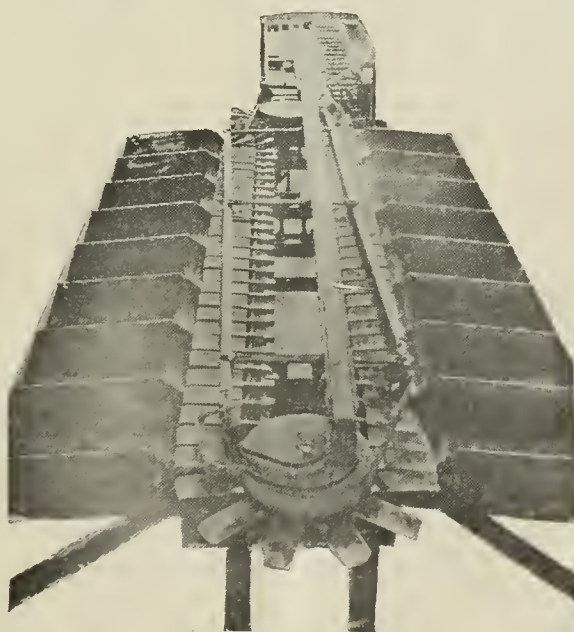
Codes: A. B. C. 5th Edition and Modern Economy

Before You Buy a Grader See The NEWELL!

A Perfected Weighing Machine, Accurate and Efficient

The operation is simply this: Fruit is raised automatically from hopper to sorters, by conveyor belt, fixed with rollers to prevent bruising. Passed by the sorters, it is deposited by belt conveyor, one at a time, upon aluminum scales, which are attached to single sprocket chain, carrying fruit along the side of the shunt-board, which gradually pushes them farther out on scales, until their weight tips scales, depositing them in packer's bins. All fruit of same weight will tip scales at same bin; it must function!

If fruit is running large, shunt board may be set in; if small, set it out. This is the only necessary adjustment.



Made in Two, Three and Four Section Models

A Few Outstanding Features of the NEWELL

Low Hopper—no step up when filling.

Automatic feed from hopper to sorting table; controlled by head sorter without leaving his place.

One piece scale with no delicate adjustment to get out of order or wear out.

Scales on SINGLE chain, not double.

TIMOTHY NEWELL, Manufacturer

Parkdale, Hood River Valley, Oregon

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

W. H. WALTON.....Editor
JERROLD OWEN.....Associate Editor
C. I. MOODY.....Advertising Manager
EDWIN C. WILLIAMS.....
.....San Francisco Representative, Hobart Bldg.

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

Bulk Apples

Apple growers in the Northwest who have been marketing their product in bulk will do well to ponder before continuing this practice. The demand and higher price for apples from this section has almost entirely been built up by superior packing methods and employing a container that is more convenient and attractive to the consumer. Quality and grading have played their part, but above all the pack has been the thing that has made Northwest apples renowned the world over and made the big development of the apple industry in the Pacific Northwest possible.

Other apple growing sections know this and they are commencing to wake up to the advantages that may accrue to them by utilizing boxes instead of barrels. A case in point was the recent visit to this region of an apple handler from Pennsylvania for the purpose of familiarizing himself with our packing methods and obtaining box material. Shipping 20,000 barrels of Albermarle Pippins from the Blue Mountain district of Virginia annually, he stated that he was satisfied that he could sell twenty boxes of these apples packed as they are in the Northwest where he now sold two barrels, and get a higher price.

This should, we think, cause reflection on the part of Northwest bulk apple shippers before they widen the wedge that may prove disastrous to the industry. To make the apple industry in the far West pay, it must receive a superior price for its product. Its long distance from the big fruit consuming centers of the country make this higher price imperative. Without it the industry cannot survive.

Higher packing costs was the reason given for shipping bulk apples from the Northwest. Why continue a practice that is not now necessary and may mean disaster.

A Sop, Not a Reduction

When all is said the cut in railroad freight rates on fruit from the Pacific Coast to Chicago and the Atlantic Coast is not a reduction but a sop handed out apparently to avoid further action for adequate relief.

What the alleged cut in the rate really amounts to is a shaving of the old rate of 12½ cents per 100 pounds or 6¼ cents on a box of apples. This applies to points west of Spokane, the latter receiving a cut of 17 cents per 100 pounds or 8½ cents a box. For granting this generous favor to the fruit shippers of the Northwest they have the valuable storing-in-transit privilege taken away unless they are willing to pay an extra 10 cents per 100 pounds on such fruit as may be stored before it reaches its destination. As it is necessary to store big quantities in this way the cut will amount on much of the fruit that goes to Eastern markets to the highly gratifying sum of 3½ to 1¼ cents per box.

It can be truly said that the fruit growers of the Northwest in applying for a cut in freight rates asked for bread and were given stone.

Grade and Pack

We thoroughly believe that this will be a year in which profitable prices will be realized for apples in the Pacific Northwest. Eastern frost damage in the spring and unfavorable conditions in many sec-

tions since should assure a heavy demand.

But the fruit must be of good quality. It will be a serious mistake for the grower to attempt to market at a profit, any off-grade, wormy, or poorly sized fruit.

We urge the grower to do everything possible to produce good quality fruit. Spraying must be timely, judicious and thorough. Also it is necessary that more attention be paid to grading the fruit. The successful grower will remember these things and will be certain of a market again next year.

To compete on the open market, fruit from the Northwest must be well graded, well packed and in desirable containers.

A Double Saving

Marketing experts in the United States Agricultural Department call attention to the fact that enormous losses are caused annually because large quantities of fruit is frozen in transit.

Last winter shippers of apples in the states of Oregon, Washington and Idaho filed claims against the railroads amounting to over \$3,000,000 to cover losses from freezing. To assist in reducing these losses the Bureau of Markets of the department has distributed as widely as possible information relative to the proper methods of loading and heating cars. It has also practically completed the designing of a heating equipment that it expects will very materially reduce these losses if employed and it is hoped it will.

There will be another and a safer way, however, of avoiding these losses from frozen fruit—shipping all the fruit tonnage possible from the Northwest by water transportation. In the initial stage of carrying fruit from the Pacific Coast to the Atlantic or to foreign markets by steamer, there may be some slight loss by improper ventilation, but this will be corrected. Entire shipments will not be ruined.

Most important a double saving will be effected—a lower transportation cost and avoiding a loss by freezing.

Shortage of Apple Boxes Probable

THE habit of pre-financing fruit box deals by box manufacturers of the Pacific Northwest to growers and dealers will, it seems, this season mean a shortage of apple boxes.

For months past manufacturers have urged the advance buying of apple boxes in order to more evenly distribute the manufacturing and delivery of the heavy demand that is made on manufacturers during the closing months of the season when picking and harvesting of apples in the Northwest is at the peak.

To encourage early buying, make for a more even distribution of delivery of apple boxes and eliminate the extreme market conditions as was experienced in 1919 with an uncertainty on a rising market, the same uncertainty prevailing in 1920 on a declining market, it should be understood the early spring market should prevail during the life of each season's crop.

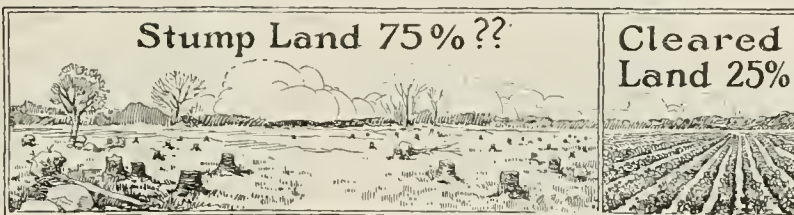
Owing to the unusual financial situation this year most manufacturers were unable to extend credit as has been the rule in former years. Growers and dealers were to a great extent in the same depressed condition, which resulted in increased efforts to hold manufacturers to their former practice of extending credit. Most manufacturers being utterly unable to meet this situation has resulted in less apple boxes having been furnished this season than any year in the history of the industry.

With less than a 25 per cent normal demand in the salmon box business for West Coast manufacturers this season, they were forced to increase efforts in a further development of other markets. The result of this has developed considerable business from eastern territory as well as from foreign fields. This came from concerns who placed large contracts and take the cash discount on delivery. These early efforts in that direction it seems are now bringing results, enhanced by the apparent break of the "buyers' boycott" of all merchandise and food products.

With this increased business from miscellaneous commodity shippers and with about 70 per cent of the apple box requirements together with pear and peach boxes and the usual demand for dried fruit, et cetera, a great many manufacturers find themselves unable to take additional business for immediate delivery.

Growers and dealers anticipating a bumper crop now sense the situation and are endeavoring to have apple boxes delivered promptly.

West Coast plants are trying to meet the situation through the increased length of the working day, while others are operating night shifts. One plant is operating a ten-hour day shift with an eleven-hour night shift. Another is operating three eight-hour shifts.



Take an Inventory of Your Land!

ARE you making as much money as you can out of your farm? Just stop and do a little figuring for a moment. This table will make figuring easier. Fill in the proper figures:

	Acres	Profit	Loss
1. Under cultivation			
2. Stump and swamp land.....			
3. This same idle land (2) cleared producing profit per acre equal to (1)			
4. Present total profit (1-2).....			
5. Possible total profit (1+3).....			

Is it not just plain *good business* to make idle stump and swamp land into producing land—to shift it from the loss column to the profit column?

The dynamite method is the usual method today for stump and boulder blasting, ditching and tree-planting as well.

But to make sure of the best results in land clearing always use



STUMPING POWDERS

Du Pont and Repauno Brands

It is the most reliable, efficient and economical explosive on the market. Constant improvement, through over a hundred years of manufacture has made it so.

One hundred page book, "Farmers' Handbook of Explosives," giving complete instructions for the use of dynamite on the farm, sent on request.

E. I. DU PONT DE NEMOURS & CO., INC.

PORTLAND

SEATTLE

SPOKANE

Loganberry Borers

THE loganberry crown borers, which occur as elongated white worms tunneling within the crown and roots of the loganberry and raspberry, are causing an unusual amount of injury this season.

Seriously injured plants should be dug and burned. The borer tunnels up in the new cane and girdles it from within, forming a bluish ring around its base and causing the cane to wilt. Because of this habit the best method of control as yet developed is as follows:

Visit the fields in late June and again in July looking for the wilted canes, typical evidence of borer work. Grasp the wilted cane in the gloved hand and remove it by twisting and pulling at the same time. The borer will generally be in the severed cane, but in case that it is not, a wire should be pushed down into the stub left on the bush. The borer in the cane will die a short time after the cane has been broken off. Where rigorously followed up this treatment will reduce the infestation to a negligible degree.

How to Propagate Small Fruits

GRAPES

GRAPES are propagated in the fall and winter by means of cuttings. Well matured canes of average thickness, having nodes or joints somewhat close together for the variety, make satisfactory cuttings. Overgrown "bull canes" should be avoided and the wood should be of last summer's growth. Such suitable growth therefore as is cut away in the annual pruning may be used for propagating purposes. Having selected a suitable cane, begin at the butt and cut off just below the node, then skip a node and cut off the cutting just two inches above the next or third node. This is repeated until the best part of the cane is used up. The cuttings will average about a foot in length and should be tied up in bundles and packed in moist sand or sawdust until spring. Or they may be buried upside down in the ground in a well drained spot. For these varieties which do not root readily from cuttings one or more canes are pulled down to the ground in the spring and covered with soil, leaving a part of the terminal end out of the ground. Roots or sprouts will generally be thrown out at the nodes and each rooted piece will make a new plant.

BLACKBERRIES

THE bushes of the blackberry usually sprout up readily and these may be transferred to a new location. During the winter, roots a quarter to a half an inch in thickness may be dug and cut into three-inch lengths. These are stored away as directed for other cuttings and planted out in the nursery row in the spring.

RASPBERRIES

THERE are three kinds—the reds, blackcaps and purple canes or hybrids. The reds sprout profusely from the roots and are multiplied the same as blackberries. With the blackcaps and purple varieties new canes are produced from the long drooping branches which bend down to the ground and take root. In the spring these plants are cut away from the parent plant and are ready for setting.

GOOSEBERRIES AND CURRANTS

THESE are easily rooted from cuttings of the new wood which are taken any time after the leaves have fallen. Cuttings therefore, may be made from such new wood as is pruned out. They are made about eight or ten inches long, tied in bundles and buried upside down in a well-drained location or packed in moist sand or sawdust in a cool cellar. The plants may also be propagated by drawing the soil up in a mound over the bushes, covering them about a fourth of the way up. Each one of the branches will take root in the course of one or two season's growth and then they can be separated to form new plants.

*Apples, Pears, Peaches
Potatoes, Onions*

and all kinds of Fruit and
Produce Bought for Cash.

Address us as to what you
have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.

TORO BRAND AGRICULTURAL SULPHUR



Improves alkali soil, transforms potash and phosphorus into plant food. Prevents wire worms, smutty grain and potato scab. 220 lbs. per acre has increased crops up to 600 per cent.

Write for circulars 6, 7 and 8, price list and samples.

DIAMOND "S" BRAND for Lime-Sulphur Solution.
ANCHOR BRAND for dry dusting. **CARBON BISULPHIDE** for rodent control.
SAN FRANCISCO SULPHUR CO.
624 California Street
SAN FRANCISCO, CAL.



Prince Albert's a new note in the joys of rolling 'em!

Talking about rolling your own cigarettes, you've got a handful-of-happiness coming your direction when you pal it with Prince Albert and the makin's papers! For P. A. is not only delightful to your taste and pleasing in its refreshing aroma, but our exclusive patented process frees it from bite and parch! You smoke P. A. with the bars down!

And, for a fact, rolling up Prince Albert is mighty easy! P. A. is crimp cut and stays put and you whisk it into shape before you can count three! And, the next instant you're puffing away to beat the band!

Prince Albert is so good that it has led four men to smoke jimmy pipes where one was smoked before! It's the greatest old buddy-smoke that ever found its way into a pipe or cigarette! And you'll o. k. that say so!

Prince Albert is sold in tippy red bags, tidy red tins, handsome pound and half pound tin humidors and in the pound crystal glass humidor with sponge moistener top.

PRINCE
the
national
joy
smoke
ALBERT



Copyright 1921 by
R. J. Reynolds
Tobacco Co.
Winston-Salem, N. C.

Tree Protectors

MECCHANICAL protectors are recommended for young trees on new ground, as they ward off attacks of cut worms, bud weevils, click beetles and other pests that prey on opening buds. Protection from ants that carry aphids into cherry trees is also recommended by the use of protectors by the entomologists of the Oregon Agricultural Experiment station. For this purpose cotton batting strips about five inches wide and long enough to reach around the tree are endorsed as excellent. Tie the band loosely at the lower edge with a string and then grasp the upper edge and roll it down over the lower edge. Tree tanglefoot is also recommended. A band three-fourths of an inch wide is the most efficient. If too wide the bands injure the young trees.

DESTROY ROADSIDE WEEDS

Because—

1. They act as centers of weed infestation for adjoining fields.
2. They may be carried for many miles by passing vehicles and animals.
3. They harbor harmful insects and plant diseases.
4. They create insanitary conditions.
5. They are unsightly.

Methods for destroying roadside weeds, approved by specialists of the United States Department of Agriculture, are:

By—

1. By mowing twice a year while they are in full bloom, usually in June and August.
2. Utilizing the roadsides for growing hay.
3. Grazing with tethered animals.
4. Converting weedy roadsides into lawns.

GRADE ALL ROADSIDES SO THE WEEDS CAN BE CONTROLLED.

THE price set by the California Pear Growers' Association this year for Bartlett pears of No. 1 grade is \$61.75 net to grower; No. 2 grade, \$33.25 per ton. Last year the price received by the association was \$100 per ton. The organization decided to limit the tonnage to be sold to the canners to 60 per cent of the pack.



Growers' and Packers' Equipment

We Manufacture:

- LADDERS
- BOX PRESSES
- PACKING CHAIRS
- BOX-MAKING BENCHES and
- AUTOMATIC ELEVATORS all
- GRAVITY & POWER CONVEYOR kinds
- POTATO GRADERS AND SIZERS of
- PRICE FRUIT SORTERS AND SIZERS Special
- NELSON FRUIT SORTERS AND SIZERS Equipment

PRICE "PRICE PRODUCTS"

Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse.

Illustrated Booklets and Price List on Request

Fruit Appliance Company

Successors to

Price Manufacturing Company, Inc.

YAKIMA, WASHINGTON

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS, JACOBS & CO., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Spraying Methods

(Continued from page 6)

the upper and under surfaces of the leaves with spray in order to keep them clean as it is to spray the fruit. In fact if we keep the foliage clean the fruit is incidentally protected. The spray required for the best results in scab control is one broken up in very fine particles. The spray can be made fine by cutting down the openings in the discs of the guns when used on a small outfit, but in so doing the "push" behind it is lacking and as a result little spray reaches the tops of the trees—none if the wind is blowing. We have found as high as 45 per cent scab infection occurring in the tops of the trees and only 5 or 6 per cent in the lower parts of the trees where growers have attempted control with inadequate equipment. Adjoining orchardists with sufficient equipment have completely controlled this disease.

What is true with the control of codling moth and scab is true also of other orchard troubles. The tops of trees must be sprayed if results are to be expected. A sprayer of generous capacity is the most gratifying implement that can be owned by an orchardist and it pays for itself in a very short time if properly handled.

Users of spray guns are often fooled in the character of the work that they are doing. A very great percentage of the orchardists in the Northwest often use insufficient material per tree. This is particularly true of the early spring applications. This failure to use sufficient material is largely due to the fact that the operator sees the spray high up in front of him, but does not see exactly to what extent or to what height he has covered his trees. The result is the worker hurries on and the tree does not receive spray sufficient to cover it thoroughly or give it the protection needed. The actual cost of the spray is usually the least expensive of the entire operation and many growers could materially increase the degree of pest control that they are now obtaining by using more material and distributing it better over the tree when they spray. Spraying can be and is, over done. This, however, is much more the exception than the rule. There are many growers who can use this advice to their advantage.

The average spray requirements of trees of various ages and for different applications has been determined by the Hood River station. Figures were obtained from growers who have been successful in their handling of various orchard troubles. The following table shows the result of the investigation; for the most part these figures are conservative:

Age of tree	Miscible Oil Gallons per tree	Summer Applications for scab and codling moth	Fall Bordeaux
11	4.1	4.1	...
12	4.5	4.5	5.0
13	5.6	4.5	5.1
14	7.0	5.2	...
15	7.2	5.6	6.1
17	8.0	6.0	7.4

Beekeepers in the Yakima valley are again declaring that the honey industry in that section is doomed unless orchardists change their methods of handling arsenate of lead spray in orchards, where alfalfa is grown.

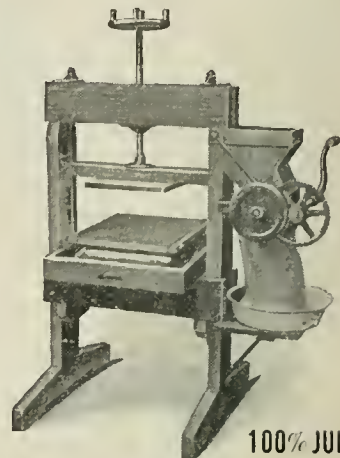
"The Wise Men of Appletree Town"

—are the men who choose their banking connection with the same discrimination they use in pruning. The First National Bank, because of its size and comprehensiveness of its departments, is particularly equipped to offer the horticulturist the most in banking service. Its facilities and the personal interest of its officers are at your disposal.

The First National Bank
OF PORTLAND, OREGON

The first national bank west of the Rocky Mountains

Orchard Queen Cider Mill



100% JUICE

It doesn't crush the apples, but grates or grinds them, breaking the juice cells so that when the pomace is pressed in the sanitary cloth sacks, all of the juice is extracted.

Orchard Queen is the simplest, easiest operated, cleanest and most efficient of cider mills. No metal in cylinder or hopper to discolor juice. Operated by hand or power. Made in two sizes. Our folder explains in detail the construction and operation of the Orchard Queen Mill. Write for it.

Puffer-Hubbard Manufacturing Co.

3203 East 26th St. Minneapolis, Minn.

MYERS

ELECTRIC HOUSE PUMPS

RESIDENCE WATER SYSTEM

Many homes and farms are being modernized by handy water facilities, and their water supply instead of being a heavy burden as it always has been in the past, is now their best servant. MYERS ELECTRIC HOUSE PUMPS, DIRECT WATER SYSTEMS, HYDRO PNEUMATIC PUMPS and CYLINDERS are playing an important part in this change by making it possible for any home anywhere to have running water at the turn of a faucet for household use—bath, kitchen, laundry, toilet; for stock watering, sprinkling, fighting fire and innumerable other purposes.

MYERS PUMPS for Private Water Systems are simple, easy to install and operate, fully proven and dependable. They are designed and built in many styles and sizes, and thus will meet your requirements as to capacity, depth of your well or cistern and method of operation. If you are still carrying water from some outside source, you are interested in MYERS "Honor-Built" PUMPS for a Myers Water System will save you more real hard work every day in the year than perhaps any other device in your home or on the farm.

Write immediately for copy of our late Catalog, No. HP20—Sent to anyone without the least obligation.

THE F.E. MYERS & BRO. CO.

No. 135 ORANGE ST. ASHLAND, OHIO.

ASHLAND PUMP AND HAY TOOL WORKS

Pacific Northwest Distributors

Spokane, Wash.
Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

Pacific Northwest Distributors



Spokane, Wash.
Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

Prune Drying

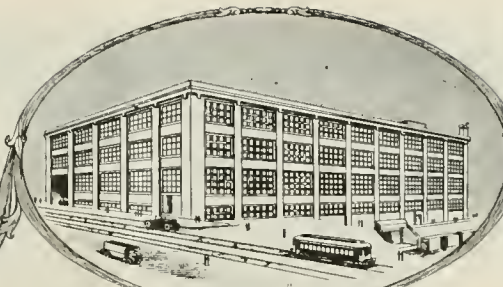
(Continued from page 8)

holes on the four sides of the chamber. This practice need not interfere with the accustomed construction of the tunnels adjoining each other.

From the various types of driers and conditions of drying, that is to say, temperatures, humidities and air flows, in use for the drying of prunes, it is obvious that the success attained is the result of methods developed empirically. Scarcely any scientific information is available for use in commercial practice, the driers depending upon their own experience or the experiences of others for methods of procedure in drying.

Figures compiled by the Market Reporter of the United States Agricultural Department show that the heavy seasons for barreled apples have come in the even years and for boxed apples in the odd years. Shipments of boxed apples have been increasing rapidly, but the shipments from barreled sections for the past season were about equal to the box and barrel movement of 1918-19.

The 1920 apple crop totalled 105,000 cars. Of this amount 70,000 cars were barreled stock. Shipments of Northwest box apples were 10,000 cars below the movement of the preceding season.



F. C. Stettler Mfg Co.

Portland - Oregon

Lithographers

Color Printers

Labels

Cartons

Folding Boxes

Cut Outs

Display Cards

Special Advertising

Stiff Boxes Plain and Fancy



THE OLD WAY; THE NEW

The Box Handle Company

of 800 First Avenue, South, Seattle, Washington has become a benefactor to the orchard man, the packer, the expressman, the produce man, and all others who handle boxes.

The man who works in the orchard can only pick up one box at a time and it is some strain to pick the box up from the ground. With a pair of handles he picks up two boxes and carries them with ease. He is not half so tired when night comes, and does as much work as two men, which cuts your labor down.

The apple season is short at the best. You don't lose any apples out of the box by using the handles. You get a better percentage of packing because the apples are not bruised by using box handles.

This handle will lift any size box from 15 to 22 inches long. Every rancher who owns a ranch from 10 to 50 acres should have from 1 to 12 pairs of handles.

Your stomach won't be sore or your back lame when night comes if you will use the box handles.

The prices are \$2.00 for one handle or \$3.50 for a pair.

After you have used a pair for one day, you wouldn't take \$20.00 for them if you couldn't get another pair. Don't let this opportunity get away. Buy now. Send us \$5.00 and let us send you one pair by Parcel Post. We feel satisfied that you will buy more if you need them.

The Box Handle Company

800 First Avenue, South
SEATTLE, WASH.

Northwest Notes From Here and There

OREGON

EARLIER estimates of the Hood River apple crop placing it at 2,500,000 boxes, are now said to have been too high and those familiar with crop conditions in the valley this year state that the yield will not be more than 1,800,000 boxes and possibly as low as 1,500,000. The unusually heavy blossoming caused the highest estimates. Much of the fruit, however, failed to set and the

loss from the June drop was very heavy in many sections of the valley. The output, it is stated, will be of exceptionally high quality and with the addition of many new facilities for housing, storing and handling the crop is expected to move to market in fine condition.

UP to the middle of July the Oregon Growers' Association had shipped 29 cars of its Mistland brand of prunes for export to England. Establishing a demand for Oregon prunes in England is looked upon as a fine stroke of business, as there is a continuous demand for this fruit owing to it being popular in English homes and eating houses the year around.

THE report comes from Vale that the entire apple crop of the Brogan district near there was recently sold to an eastern buyer at a price of \$50 per ton for all varieties except Delicious which brought \$75 a ton, the fruit to be delivered in bulk. Some box apples that were sold brought from \$2.00 to \$2.50.

KING'S Products Company from its plant at Salem shipped its first car of the 1921 crop of dehydrated loganberries recently. The car was part of a large shipment which the company has sold in the East. The King's company has also shipped 2,000 barrels of Maraschino cherries.

These were of the Royal Anne variety. Each barrel contained 250 pounds of cherries, a total of 500 tons of fresh fruit. The entire shipment comprised 20 carloads.

J.O. HOLT, manager of the Eugene Fruit Growers' Association, announces that the demand for canned fruits has picked up wonderfully recently and that the association has been compelled to turn down a number of orders for some of its output. Mr. Holt states that the increased business is due to the fact that buyers are just waking up to the real condition, which is that there is going to be a shortage of canned fruit this year. The Eugene association has this year canned over a million pounds of cherries and over half a million pounds of loganberries. It also recently finished an order for 25,000 gallons of loganberry juice.

PORTLAND capital having become interested in the big Sheridan juice plant the company has been reorganized and the plant will be operated on a much bigger scale than formerly and in addition to its output of loganberry juice will put out a line of original fruit confections. The capitalization of the company will be increased to \$75,000. George Brown, who has been manager of the company, will be retained in that position. The new members who will be added to the directorate are: J. P. Jaeger of Jaeger Brothers; Bert Haney, former United States attorney for Oregon; James Lynch, vice president of the Lumbermen's Trust Company; Fred Felter, editor of the *Pacific Drug Review*, and Fred W. Vincent, of the Vincent & Vincent Advertising Service.

BY the completion of the financing of the Savage Rapids irrigation project it is expected that 14,000 acres of fruit and other land in the Rogue River valley will be receiving water next September. The project has greatly stimulated interest in fruit growing in this section and is expected to be responsible for a big development in the near future.

J.A. ORMANDY, assistant general passenger agent of the Southern Pacific lines in Oregon who recently made a survey of fruit conditions in the Rogue River and Umpqua valleys, reports that between 1,600 and 1,800 cars of apples and pears will be moved this season from this section.

Pond's Centipede Ladder


(Patent Applied For)



Ask your implement dealer to show you the latest invention in ladders for use in high trees. Made of iron, Oak and clear Douglas fir. Tall, strong, light weight, rigid, stable and reasonably priced, the last word in ladder efficiency. In tall trees it will cut your picking costs in half. Descriptive circular on request.

RUSSELL G. POND
(Forest Engineer)
Inventor and Shipper of
Pond Products
Parkdale, Hood River, Ore.

The Hood Shock Preventer



FOR ALL CARS
Saves springs, brakes, gasoline, tires, time, irons out the road, Snubs the bumps. Eliminates side-sway. No rattle. Be your own judge as to the merit of

THE HOOD
Satisfaction Guaranteed
Ford Sets, \$15. Others up to \$32.50
29 Park St., N. Portland, Ore.

“You may be Sure”
says the Good Judge



That you are getting full value for your money when you use this class of tobacco.

The good, rich, real tobacco taste lasts so long, you don't need a fresh chew nearly as often—nor do you need so big a chew as you did with the ordinary kind.

Any man who has used the Real Tobacco Chew will tell you that.

Put up in two styles

W-B CUT is a long fine-cut tobacco
RIGHT CUT is a short-cut tobacco

Weyman-Bruton Company, 1107 Broadway, New York City

Mason, Ehrman & Company

Packers and Shippers

Office
74 North Fifth St., Portland, Ore.

**“RED RIBBON”
BRAND
DRIED FRUITS**

*We pay cash at time of
delivery*

Handling a large part of
the prune crop of Oregon
and Washington

See us this season before
disposing of your crop

LARGE quantities of strawberries and cherries have been barreled this season in the various packing plants in the Willamette valley. The berries were sorted in the same way as they would be for canning and then put into 50-gallon oak barrels and a full sack of sugar poured in each. The fruit is not crushed, but left whole. It is then put into cold storage to be put to various uses later. While this process has been utilized for loganberries for several seasons it is a new departure for the other small fruits.

WASHINGTON

BIG red apples will bring at least \$17,000,000 to 2,000 growers in the Wenatchee valley this year, according to W. T. Clark, who is known as the "father of Wenatchee," because of his activities in putting in the first irrigation system in the valley. Mr. Clark estimates that Wenatchee will produce a 15,000-car tonnage with an average price of \$1.50 per box.

J. R. WILSON, manager of large orchards near Waverly and Fairfield, is authority for the statement that the average cost of apple production in the Northwest this year has decreased almost 30 per cent over last year. Two of the principal items in this decreased cost cited by Mr. Wilson are boxes and labor. Boxes that last year cost 25 cents are being bought this season for 13 cents and labor that was receiving \$5 per day is this year being paid \$3 and \$3.50 per day.

THE state of Washington produces over 15 per cent of the apples of the nation and has increased its yield over 700 per cent during the last 10 years, according to a bulletin recently issued by the census bureau. Statistics compiled by the bureau show that Washington's apple crop for 1919 was 21,568,691 bushels, while the total for the nation was 136,746,154 bushels.

SNIPES MOUNTAIN, near Sunnyside, Wash., contributed \$15,000 worth of cherries to the Yakima valley's quota this season, it is reported. This is the largest crop ever harvested there. Practically the entire tonnage was shipped to Minneapolis.

FIGURES at the office of the Spokane Fruit Growers' Company place the Northwestern apple grower favorably this season as to crops and probable prices. While the United States crop is rated at 41.8 per cent of normal for 1921, as against 79 per cent in 1920, the Washington crop for 1921 is rated at 98 per cent of normal as against 85 per cent in 1920. The valley will produce about 75 per cent of the 1920 yield.

AN APPLE export agency for handling Wenatchee district apples abroad will be formed by Edwin Smith, formerly manager of the Wenatchee Valley Traffic Association. Mr. Smith spent several years with the United States bureau of markets before coming to Wenatchee.

THE Ryan Fruit company announces the purchase of the \$20,000 brick warehouse of the Sunset Fruit & Produce Company at Wapato. The structure is two stories, has 9,000 square feet of space on each floor, and was built two years ago. H. R. Nosler, manager of the Yakima branch, will be superintendent, while the practical overseeing will be in charge of A. H. Cousins.

YAKIMA valley's first car of apricots left Sunnyside July 9, destined for Iowa. It contained 800 crates and, according to C. M. Holtzinger, averaged \$70 a ton to the grower.

THE cherry crop of the Wenatchee district will be less than 75 cars, instead of 125, as previously estimated. The crop will yield the growers about \$100,000, against over \$250,000 last year.

ASSURANCES that there would be a supply of refrigerator cars sufficient to take care of this season's apple crop were received at Yakima

QUALITY



Half Century
of Service

"Clothes make the man
Labels make the can"

Let us dress
your "Silent
Salesman"
to sell your
product.

SCHMIDT LITHOGRAPH CO.

SEATTLE · LOS ANGELES · FRESNO
PORTLAND · SACRAMENTO · HONOLULU
· MANILA ·
SAN FRANCISCO

SERVICE

recently from H. M. West, local representative of the Union Pacific system. The road, it is said, is making special efforts to see that the valley crop is protected.

THE Spokane apple district, including Spokan, Stevens and Lincoln counties, will ship approximately 1225 cars of apples this year, according to an estimate made by E. B. Kelley, state horticultural inspector.

IDAHO

ACCORDING to the monthly report of the Idaho co-operative crop reporting service, the apple crop for the state fell off 153,000 bushels from last month, due mostly to several severe hail storms in Twin Falls and Nez Perce counties. The loss was particularly severe in the Lewiston Orchard district. There was a normal June drop and production is now placed at 3,314,000 bushels. Last year it was 3,360,000 bushels.

FRUIT and produce shippers in the Rupert district have recently written Senator Gooding of that state urging federal legislation toward the construction of a shipping canal from American

Box Shooks

East Side Box Co.

Manufacturers

SPRUCE AND
HEMLOCK

Box Shooks

Foot of Spokane Avenue

Portland, Oregon

Falls to Great Salt Lake, a distance of about 70 miles, in order that farm products from that section might be moved to market by water. It is stated by the shippers that the request is being made owing to high freight rates.

▲ ▲ ▲

NEWS from Boise is to the effect that the fruit on a number of apple orchards in that section has been sold to Denny & Co., of Chicago, the Cochrane Brokerage Company of Kansas City and A. T. Harmon & Co., of St. Louis. The apple outlook in Idaho generally is reported to be good and the prospects for a 1,000-car prune crop to be favorable.

What They are Doing in California

CALIFORNIA'S first Bartlett pears to be shipped to the Chicago market brought \$8.50 per box, according to recent telegraphic advices. The pears were a small lot shipped by express from the orchard of H. D. Kercheval, one of the largest shippers in the Sacramento River district.

▲ ▲ ▲

COURTS in California are generally upholding the strenuous efforts that are being put forth by state and county officials to maintain the quality of the state's perishable products. A case in point was the recent fining to the extent of \$150 of a Japanese grower in the Imperial valley who shipped green cantaloupes.

THAT fruit and other crop pests may creep into a state under most unusual circumstances was shown in California during the past month when quarantine officers on the state line discovered

alfalfa weevils in the bedding of an auto camper who had been in Nevada. The occupant of the automobile had cut alfalfa in Nevada to place under his blankets for bedding.

Musical Merchandise — Write Us	<p>WE SAVE YOU MONEY!</p> <p>W. Martius Music House, Inc.</p> <p>1009 First Avenue, Seattle, Washington</p> <p>Everything Known in Music</p>	SHEET MUSIC — Write Us
--	--	------------------------------------



"WENATCHEE" FRUIT AND VEGETABLE PICKING BAG

(Carpenter's Patent)

Made of heavy canvas, reinforced with leather, stitched with waxed harness thread, to a steel frame. Halter webb carries the load from the shoulders as suspenders. These patented features make it so popular, serviceable, practical and labor-saving.

Send for Sample, \$2.50 Postpaid.
Special Prices to Quantity Buyers

C. A. CARPENTER
3837 35th Ave. S. W. SEATTLE, WASH.
Also write the Manufacturers and Distributors
SCHEFFER & ROSSUM CO.
ST. PAUL, MINNESOTA

Correct Lubrication

is the most important factor in the successful operation of your tractor **ZEROLENE** is correct lubrication

A grade for each type of engine

STANDARD OIL COMPANY
(CALIFORNIA)



Our Inquiry Department

COVER CROPS

WHERE the rainfall is limited during the growing season and the irrigation supply restricted it is advisable to plant alfalfa in an apple orchard?—J. H., Washington.

No. Under the circumstances you mention, the alfalfa, which requires large quantities of water to mature properly, will make a scanty growth and is liable to rob your trees of their share of moisture. If you want a mulch or cover crop it would be better to plant vetch or clover under the conditions you have outlined.

▲ ▲ ▲

PRUNE TREE TROUBLE

The leaves on my Italian prune trees are turning brown and falling off. The prunes are either turning red or yellow and are dropping off. This orchard is in blue grass heavy sod. I have sprayed and there are no insects in this orchard. It has plenty of water. Could you tell me what to do or could you refer me to someone who could? H. L. E., Idaho.

From what you tell us we are inclined to believe that lack of nourishment and soil fertility is what is the trouble with your prune orchard. It is very probable that the heavy sod you tell us is in your orchard should be plowed up and the orchard placed under cultivation during the growing season. This heavy sod is undoubtedly robbing your trees of their vitality. We advise you to communicate with the Experiment Station of the University of Idaho at Moscow in your state.

▲ ▲ ▲

PRINTING ON APPLES

Will you please send me some information on the marking of apples by pasting some substance on them and then letting the sun redden them only where it is desired to have the printing?—K. M. C., Oregon.

The process of marking apples in the way you inquire about is as follows: A design is made on paper—the design then being cut out so there is a perforation allowing the sun to shine through. This design or lettering is pasted on the apples before they commence to color, and after they have obtained the highest degree of color these designs are removed. The portions of the apple covered up by this design or lettering, as you can see, remains the original color as when they were first pasted on. This is the process. It was first used in the Hood River Valley by a large firm of apple buyers who utilized the product for one of the prominent cafes in New York City. The idea, however, did not originate in America, having been taken from France.

These labels or designs are made with a steel die.

▲ ▲ ▲

PROTECTING TREES FROM RABBITS

I have 30 acres of apple trees set out in the Okanogan valley last spring and a year ago and expect to plant out 30 acres more in the next two years. Last fall I wrapped the trees with tar paper to protect them from rabbits, but snow came and packed and the rabbits ate all the twigs above the tar paper. Fencing and wire wrapping are too expensive. Is there not some formula to spray the trees with in the fall to stop the rabbits from eating them?—D. T., Washington.

There is no spray that you could use that would be effective in this case. That is, there is nothing of this kind that you could use without putting something on the trees so highly poisonous or in such large quantities that it would be prohibitive. As you say, wire wrapping is expensive, but it is the most effective and about the only means of preserving your trees under these conditions. There is one remedy that you might try and that is poisoning the rabbits with poison bait—carrots, or some other vegetable of which the rabbits are very fond, treated with strychnine might do the work. As you probably know, thousands of jack rabbits in the grain countries are gotten rid of in this way.

TRACTOR PRICES

FRUITGROWERS who are contemplating the purchase of a tractor will be interested in knowing that the International Harvester Company has just made a second cut in its tractor prices. The reduction has brought the International 8-16 and Titan 10-20 down to \$250, and the International 15-30 to \$550. These are the lowest prices the company has ever quoted on these makes of tractors, considering the equipment now included in the price which was formerly charged for as extras. Other tractor manufacturing companies have also announced reductions more or less sweeping. The result being that tractor farming, with present prices of fuel and lubricating oils, is now on a much more economical basis than is possible by using animal power.

SNAPSHOTS

Eastern Oregon is not looked upon as much fruit products from the little district of Cove of a fruit producing section, yet the value of the will this year total \$140,000. Forty thousand dollars of this amount will be realized from cherries. Its apple crop is valued at \$20,000, over \$10,000 worth of berries were shipped and other fruits make up the remainder of the amount.

▲ ▲ ▲

More than 50 per cent of the heavy soils of the use of lime is the advice of W. L. Powers, Western Oregon can be made more productive

Chief of Soils of the Oregon Agricultural Experiment Station. ▲ ▲ ▲

The California Raisin Growers' Association estimates that the crop of raisin grapes in the Fresno district this year will total 135,000 tons. The production is estimated to be 80,000 tons below normal. ▲ ▲ ▲

The present production of honey in Oregon is nearly 100,000 pounds. Bee pasture is being rapidly increased owing to larger areas coming under irrigation.

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.
Catalog mailed on request.

NOW is the time to send to

Milton Nursery Co.

MILTON, OREGON
For their 1921 Catalog
Full Line of Nursery Stock
"Genuineness and Quality"

TRAUNG
LABEL & LITHOGRAPH CO.
LABELS
AND
CARTONS

FACTORIES
San Francisco
Seattle
Stockton

SALES OFFICES
Fresno
Sacramento
Portland
Tacoma

"The House of Quality & Service"

Write for Terms

EFFICIENCY

POWER PRUNE DIPPERS AND TRAYERS

We make the best. Write for our catalogue. This is the dipper demonstrated at the State Fair at Salem last season. Order now while we have the supply.

SALEM MFG. CO., Salem, Oregon
Factory located at 1396 North Front and Hood Streets

Marketing News of Live Interest

WHILE few apple sales have been reported so far in the Northwest a cash buyer in the Wenatchee district is reported to have recently paid the following prices for several varieties: Delicious, \$2.25, extra fancy; \$2 for fancy and \$1.75 for C grade; Rome Beauties, \$1.75, extra fancy; \$1.50 for fancy and \$1.20 for C grade; Winesaps, \$2, extra fancy; \$1.80 for fancy, and \$1.50 for C grade. The Skookum Packers' Association, it is said, has contracted for 250 cars at \$2.50 for extra fancy Delicious and \$1.75 for extra fancy Jonathans. These prices are taken to set the pace for the coming season. Winesaps, Jonathans and Rome Beauties were purchased at about the 1920 figure and Delicious slightly lower.

ACCORDING to estimates of the bureau of crop estimates, Oregon shows indications of having a larger pear crop this year than last. Pear yields in most of the other states are below normal and a good price for the crop generally throughout the country is expected. In some of the Eastern states the estimated yield has been placed as low as 17 per cent of normal. The apple crop in the Rogue River district promises a 25 per cent increase, the bureau reports, while some of the Willamette valley orchards are expected to produce nearly double the crop of apples they did a year ago. Other orchards in the latter region, however, which are affected with fungus will produce less.

THE second crop of everbearing strawberries in the Spokane valley came on in quantities July 25. The price was 15 cents per box and \$3.50 per crate. Loganberries, raspberries, blackcaps, currants, and cherries sold at \$2.50 to \$2.75 per crate. Washington peaches from the Yakima and Wenatchee districts brought \$1.10 to \$1.25 per crate. It is expected that the crest of the peach season in

Washington will be reached the latter part of August.

FEW offers have been made on the apple crop of the Yakima valley up to the present time as far as can be learned, but inspection of the orchards is being made by prospective purchasers and it is thought that the next few days will develop some idea of the prices orchardists in this section may expect.

LATE reports from Canada are to the effect that earlier estimates of an enormous crop there have had to be greatly reduced on account of the June drop. Notwithstanding the reduction the crop in Canada is expected to be larger than that of last year when it was 3,382,640 barrels.

BARTLETT pears in the Yakima valley are maturing rapidly and the estimate for the output this year by H. A. Glen, Northern Pacific general agent, is 1,650 cars. Quotations for high-grade fruit are ranging from \$30 to \$45 per ton. Twenty-five cars are reported to have been contracted for future delivery at \$35 per ton.

HOOD RIVER growers, who are discussing apple prices, are expecting figures around \$2 a box, according to a late report. The opinion there is to the effect that the demand for the fruit of that section will start at a considerably lower figure, but will soar as the season advances. The average price received at Hood River last year was \$1.35 per box.

PROSPECTS for fruit in general throughout the United States declined during the month of July. Lack of rainfall in some sections coupled with a heavy drop is reported from most states. The peach crop is small in most sections and the pear crop varies from a half crop to failure in most states.

Ample Cold Storage Space

offered in fire-proof modern building within 48 hours of New York and other Eastern points. Storage - in - transit rates. Low storage rates. Ample space due to failure of Virginia apple crop.

Write

WINCHESTER COLD STORAGE COMPANY
WINCHESTER, VIRGINIA

DON'T WAIT ANY LONGER

Get a Camera FREE!



Anyone can earn one of these handsome Ansco 2 1/4x3 1/4 Cameras in his spare time. Look on page 22 of the July issue for full particulars, or drop a post card to Better Fruit, saying you want a camera. Lots of people are getting them, why not you? It is really very easy. It only takes twelve subscriptions, including your own renewal. Any other renewal subscriptions at \$1.00 each will count the same as new ones. We guarantee you a generous reward whether you secure two subscriptions or twenty.

BETTER FRUIT

12th and Jefferson Streets
Portland, Oregon

At the Sign of the Fir

Do You Like Your Letterhead?

We have just one recipe for making a good letterhead. It is: Mix (1) sales experience, (2) a knowledge of design, and (3) common business sense.

This combination results in good stationery at the lowest possible cost.

It is rare, indeed, that you find all these "ingredients" combined in one organization. But you do in Arcady.

Telephone Main 8829

The Arcady Company
Complete Advertising Service

WRITING
PRINTING
MAILING
ARCADY BLDG.



MULTIGRAPHING
MAILING
LISTS
12th & JEFFERSON

Oregon Growers' Association Notes

A REVIEW of the activities of the Oregon Growers' Co-operative Association shows that on its second anniversary, July 26, this year, it had grown in membership from 137 to 1,836 with a fruit acreage under its control of more than 30,000 acres. During this time the organization has met with strong opposition, unfavorable conditions in the fruit industry and a financial depression, but is now declared to be in a better condition to be of service to its members than at any time since it was formed. It recently added 14 members with an acreage of 265 acres. R. C. Paulus, General Manager of the Association estimates that it will handle \$2,300,00 worth of fruit products this year.

▲ ▲ ▲

THE association recently went into new territory, having signed up 1,000 acres of the finest fruit and berry land in The Dalles district. Having studied the matter of co-operative marketing, a number of successful growers invited the association to come to The Dalles and within a short time 80 of the most successful growers in that district became members. Already it has purchased the large plant at The Dalles, formerly operated by the Stadleman Fruit and Produce Company, and is shipping vegetables and berries.

Cannery Notes

RETURNS received by the government from 3,190 establishments engaged in the canning industry in 1919, according to the recent census, show that the products for that year were valued at \$416,145,000. In the census of 1914 there were 3,250 establishments reported with products valued at \$158,016,000. While there was a decrease in the number of canneries, the total value of products increased \$258,129,000, or 163.3 per cent. The following table shows the value of canned and dried fruits packed during the year 1919:

Number of establishments.....	3,190
Value of products.....	\$416,145,000
Vegetables, canned.....	164,619,000
Fruits, canned.....	127,965,000
Fruits, dried.....	86,024,000
Soup, canned.....	11,857,000
All other products (1).....	25,680,000

(1) Including dried vegetables, preserves, pickles, cider, vinegar and other canned foods produced in canning establishments.

▲ ▲ ▲

THE Libby, McNeil & Libby cannery at Yakima will receive 800 tons of Bartlett pears contracted for under its old agreement, which calls for a price of \$22.50 per ton. It is expected that this stock will run through its plant at The Dalles. Last year, owing to the higher price being generally paid for canning pears, the company ignored its low contract price and gave the growers the benefit of a compromise price between it and the higher price. The Bartlett pear crop in Washington is said to be of fine quality this year and select stock in some of the orchards is reported to be running as large as three inches in circumference.

▲ ▲ ▲

ASSERTING that the industry is willing to supplement the efforts of the government by the expenditure of hundreds of thousands of dollars of its own money in research work, the board of directors of the National Canners' Association at Chicago recently passed a resolution to this effect. The canners also adopted a resolution at this meeting, urging support by the government of important scientific research formerly conducted by different departments of the government, especially the Department of Agriculture, but now curtailed for lack of funds.

J. & H. GOODWIN Limited

Apple Exporters

Headquarters in United States

60 State Street

Boston, Massachusetts

The Largest Handlers of American Apples in English Markets

By using our service you can send your apples direct from the United States into the industrial centers of England. The same organization (J. & H. Goodwin, Ltd., throughout) which ships your fruit from the U. S. A., sells and distributes in London, Liverpool, Manchester, Glasgow and Hull, and on the European Continent.

This means quick handling, considerable economies and the fruit being sold in the freshest possible condition, which means greater returns.

For dependable export information write us at 60 State Street, Boston, Mass., or 127 Duane Street, New York City.



Water Instead of Ice!

This process of cooling by evaporation is recommended by the United States Department of Agriculture, and is being used successfully in thousands of homes. The Empire Iceless Refrigerator will save your food from spoiling through the hot summer months, and there is absolutely no expense attached to its use. Made also in windlass type for use in wells, etc. It is a proven success, and is guaranteed to do the work. Let us send you descriptive folder and prices.

Farm Supply Company

281 12th St.

Portland, Ore.

With the Poultry

DISEASES OF POULTRY

DISEASES of poultry have spread through the country this last year with great rapidity, and have caused enormous loss to poultrymen, says Dr. J. N. Shaw of the veterinary medicine department, Oregon Agricultural College.

Among the ills suffered by poultry in most sections of the country are chicken-pox, tuberculosis, white-diarrhea, and the presence of lice and mites. Some of these troubles are more or less easily remedied if even a little perseverance is used, Dr. Shaw thinks.

Chicken-pox is listed as one of the most prevalent diseases on the coast. It has lived up to its reputation for fatality this season. The experiment stations of Washington and California have produced a vaccine that shows remarkable results in controlling the spread of the disease and preventing deaths. In one year 800,000 doses were sent to the various parts of the country, 17,000 doses of which came to Oregon last winter.

Tuberculosis is listed next in fatality. Fully 60 per cent of the birds brought into the laboratory for examination and diagnosis have been affected with this disease, the causal organism of which is different from that causing tuberculosis in humans. This disease has a characteristic of not showing any symptoms until the fowl is so badly infected that it cannot be cured. All suspected cases should either be isolated or immediately destroyed. The positive test for this disease may be obtained only by isolating the organism and placing it under the microscope for identification.

White-diarrhea is a disease of which the average poultryman knows something from experience. The causal organism known as bacterium pullorum attacks the ovaries of the mature birds and causes fatal diarrhea in chicks. The presence of white, pasty diarrhea and a peculiar chirp is almost positive evidence of infection in chicks up to four days old, whereas there are no apparent symptoms resulting from the infection of older birds. Infection of otherwise healthy birds comes from infected droppings, by contact, impure drinking water, and unclean housing conditions, but chiefly through infected breeding stock. In all cases it is decidedly advantageous to destroy all sources of infection.

Round worms are quite common and frequently appear in the intestinal tract of birds that are apparently healthy. The California station has found the use of tobacco-dust quite successful as a remedy for this trouble. No satisfactory treatment has yet been found for the tape-worm. Lice are killed by the application of sodium flouride to the skin.

LICE AND MITES

WHEREVER poultry are kept these pests are sure to be found unless a strict watch is kept and proper methods of destruction are employed. Lice are usually found upon the heads and necks of fowls and under the wings and around the vents. They seek moisture in some form, hence are also found about the eyes, in the nostrils and around the vent.

As dust is one of the best preventives of lice and mites it should be provided for the daily bath. If fowls become debilitated they should be quickly rid of these pests. The best remedy is to dust them thoroughly under the wings, about the neck and around the vent with insect powders that can be obtained for this purpose. The applications should be repeated about three times at intervals of one week in order to kill those which hatch.

Mites work on the body of the fowls during the night and are found in the crevices about the roosts and in nesting material in the daytime. The free use of kerosene or carbolic acid solution or some of the commercial disinfectants will prove effective in fighting this insect. A good preventive

is a thorough coat of whitewash applied to the inside of the poultry house.

POULTRY NOTES

BOTH hens and pullets need to be well cared for during the late summer and fall months if winter egg production is to be maintained.

BROILERS shrink about half a pound each when dressed.

IF FOWLS are in fairly good condition two weeks is long enough to fatten them if they are highly fed.

LA TE hatched chicks do better if fed by themselves and not allowed to run with the larger fowls.

NO B O D Y can raise poultry and produce eggs at as low a cost as the farmer if he will give his fowls a little attention and proper housing.

TO PROMOTE digestion fowls should be kept in quarters where they can take the proper amount of exercise.

NO W is a good time to repair the poultry house if eggs are desired in winter. Don't wait until the first cold rains and weather reduces the vitality of your flock by having them improperly housed.

IF it is possible for you to do so store away some oats or rye in the sheaves for use during the winter. You will find them profitable in promoting egg-laying.

WH I L E the weather is still dry and warm the poultryman will find it an advantage to store away a barrel or two of dust to be used in the dust boxes during the winter.

Bits About Fruitmen and Fruitgrowing

TH E signing of contracts between the new Wenatchee District Co-operative Association, the Yakima Fruitgrowers' Association of Washington and the North American Fruit Exchange is said to make the latter organization the largest distributor in the world of apples and other fruits and vegetables. The announcement of the reorganization of the exchange under a co-operative plan, devised by Aaron Sapiro, was recently made in New York. The announcement is of importance to the fruit growers of the Northwest because of the large tonnage handled by the organization in Oregon, Washington and Idaho. Under the plan of the reorganization the exchange, instead of being a purely personal profit institution as it has been in the past, it is stated, will now be a partner in the profits with the growers' associations it represents. The announcement states that the new organization has 140 branch offices in various parts of the country and that others will be opened.

SE C R E T A R Y of Agriculture Wallace announces the appointment of Dr. H. C. Taylor as chief of the bureau of markets and crop estimates to succeed George Livingstone, who recently resigned. Dr. Taylor for several years has been chief of the office of farm management and farm economics and is looked upon by the department as being particularly fitted for the duties of his new position.

We buy car-lots of fruit. Wire or write us your offerings.

Coughlin Brokerage Agency

Mitchell, South Dakota

Some Reliable Northwest Nurserymen

An Early Order For Fall or Spring Delivery

Placed with

SALEM NURSERY COMPANY

428 Oregon Building
SALEM, OREGON

Will receive careful attention and give you good choice of varieties

Additional Salesmen Wanted

Wake Up Get a Move on. You Are Losing Time.

We mail prepaid four dozen mountain grown strawberry plants for one dollar.

Best for the West
Best for You
List Free

Evergreen Plantation

New Meadows, Idaho

Capital City Nursery Company

426 Oregon Building
SALEM OREGON

Will supply you with first class stock in

FRUIT, NUT AND ORNAMENTAL TREES,
SMALL FRUITS,
ROSES

Send for catalog

WE Need Salesmen

AN APPLE show that recently attracted a good deal of attention in London was a large exhibit from Australian orchards. The fruit was packed in cases similar to the boxes used in the Northwest and the show was for the purpose of advertising Australian apples to the consumers of Great Britain. The organizers of the exhibit were Gerald and D. da Costa, who are well known in the United States, having handled large quantities of American apples for a number of years. It will be of interest to Northwest growers to know that the shipment of Australian apples to Great Britain has increased from 9,000 cases in 1910 to 600,000 cases this year.

▲ ▲ ▲

C.W. McCULLAGH announces that he has opened offices in Hood River for the purpose of buying fruit for the Eastern trade, and will operate throughout Oregon, Washington, Idaho and Montana. Mr. McCullagh began his career in the wholesale trade of Chicago, going from there to Seattle, where he was connected for six years with two of the largest houses. Then for five years he was sales manager for the Yakima Valley Fruit Growers' Association, leaving them for a similar position with the Hood River Apple Growers' Association. His knowledge of Eastern conditions fits Mr. McCullagh well for his new line of endeavor.

▲ ▲ ▲

THE HAWAIIAN pineapple industry has shown a remarkable growth in the past fifteen years. Packing approximately 144,000,000 cans in 1920, when in 1901 but 48,000 cans was the total output of the island, is the wonderful record of the pineapple canners of Hawaii. Marvelous inventions have been born of necessity in this, as in other great industries. There is one cannery operating smoothly and efficiently with a daily capacity up to 900,000 cans a day. The four outstanding factors in the wonderful progress made in the cultivation and canning of this luscious fruit are: The use of iron sulphate spray to offset the lack of iron in the soil; the perfecting of a mechanical coring and peeling machine; the invention of the slicer, and, finally, the development of the "eradiator," which gleans the pineapple left on the skin after the first rough peeling. There are about 46,000 acres taken up by the pineapple industry on the island, giving employment to approximately 20,000 people.

▼ ▼ ▼

OUR Canadian cousins are taking an active interest in loganberry culture, according to reports from Vancouver Island. It is claimed by those who know, that the berries grown there are equal to the best, and the Victoria and Island Development Association will send a representative to Oregon to study the methods employed. The association also plans to bring over a French wine expert for the purpose of attempting to develop a new flavor in the juice products.

FREE An 8x10 Enlargement
 With \$3.00 Worth of
 Kodak Finishing. Quick Service
 Films received forenoon mailed out same
 day. We pay return postage.
 All Work Guaranteed
WOODARD, CLARKE & CO.
 Alder at West Park PORTLAND, ORE.

FRUIT TREES
 We are extensive growers of fruit
 trees adapted to the Northwest.
GET OUR PRICES
COLUMBIA NURSERY
COMPANY
 1490 Union Ave., No. Portland, Ore.

Look for the Sign

On service stations and garages
 everywhere you will see the Red
 Crown sign.

It will pay you to look for it before
 you fill because Red Crown Gasoline
 is the gasoline of quality with a con-
 tinuous chain of boiling points, giving
 ready starting, rapid acceleration and
 maximum power.

STANDARD OIL COMPANY
 (California)



Are You the Man?

*If so, BETTER FRUIT offers you
 a chance to make good money*

We want a representative in every fruit-growing community. In every such community there is some individual with a little time each month to spare, who, by representing BETTER FRUIT, can make a good income.

Per haps it will be an elderly man?

A young fruit-grower just getting started?

A wife who wants to help out?

An ambitious boy of girl who wants to make extra money?

We want someone in *your* community to become our *permanent* representative—to secure new subscriptions for us and renew old ones.

We want two or three representatives in the Hood River Valley. -Several in Yakima and Wenatchee—in the Willamette Valley, Rogue River, etc. In fact we want *permanent* representatives in every fruit district of the West.

Our proposition is a good one. Are you the man or woman for the job?

Write today, stating your qualifications.

BETTER FRUIT PUBLISHING COMPANY
 TWELFTH AND JEFFERSON STREETS
 PORTLAND, OREGON

OAC

Oregon's Higher Institution of
TECHNOLOGY

Eight Schools; Seventy Departments
 FALL TERM OPENS SEPT. 19, 1921
 For information write to the Registrar
Oregon Agricultural College
 CORVALLIS

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

FARMS FOR SALE

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANT to hear from parties having farm for sale. Give particulars and lowest price. John J. Black, 197th St., Chippewa Falls, Wisconsin.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., E.K. Washington.

LOGGED-OFF LAND in Stevens County, Washington, at greatly reduced prices: Why bother with fruit land at high prices when you can get good dairy and stock land at from \$5.00 to \$20.00 per acre? Write for folder. Phoenix Lumber Co., Dept. B, Spokane, Wash.

BIG APPLE ORCHARD and by-products plant in famous Southern-Pennsylvania Apple Belt. J. P. Stewart, 305 Carlisle Ave., York, Pa.

MISCELLANEOUS

ARROW CARBOLINEUM kills chicken mites in poultry houses. Preserves wood against rot and premature decay. Write for circular and prices. Carbolineum Wood Preserving Co., 222 E. Water St., Portland, Oregon.

TOBACCO—KENTUCKY NATURAL LEAF, chewing and smoking; rich, ripe and mellow; two and three years old, aged in wood; 2 lbs., \$1; 7 lbs., \$3; sample 10 cents. Maddox Bros., Dept. 22, Mayfield, Ky.

BUY A CATERLOUSE Tractor Attachment for \$175, attach it to your Ford and it will do four horse work. Write us. Gallagher & Co., Inc., Ash and Sinto, Spokane, Wash.

POULTRY

ORDER CHICKS NOW for delivery any time after August 1st. Broilers pay, Pullets make good layers. R. I. Reds, White Leghorns, Barred Rocks. Safe arrival guaranteed. Write for circular. Stubbe Poultry Ranch & Hatchery, P. O. Box 67 Palo Alto, Calif.

PULLETS—We can supply O. A. C. and Tancred White Leghorn Pullets, Rhode Island Reds and Barred Rocks at all ages—some ready to lay. Also one and two year old hens, good breeders. Exceptionally fine range-raised birds. Portland Seed Co., 180 Front St., Portland, Ore.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO.

427 Oregon Building Salem, Oregon

AGENTS WANTED—Benedict Nursery Co., 185 East 87th St., Portland, Oregon.

AGENTS WANTED—Our prices are right. Columbia Nursery Co., 1490 Union Ave., No., Portland, Oregon.



Kills prairie dogs, ground hogs, ground squirrels, pocket gophers. Save alfalfa. Experimental stations approve. 1000 tablets P. P. \$1.50. Warranted. Ask your druggist or send direct. Booklet Free. Address FT. DODGE CHEMICAL CO., Ft. Dodge, Iowa

FREE We will make one 5x7 enlargement FREE, for anyone who sends a roll of films to be developed and printed, enclosing this adv. A. A. BAILEY, JR.

Lipman Wolfe Bldg. Portland, Oregon

BEEES AND BEEKEEPING

The number of hives of bees on farms in the United States on January 1, 1920, according to the fourteenth census, was 3,476,346, as compared with 3,445,006 in 1910, showing an increase of 31,340, or 0.9 per cent. In making comparisons between these two years the change in the date of enumeration, from April 15 in 1910 to January 1 in 1920, should be taken into consideration. Especially in states where the winters are severe, the number of hives of bees on farms in April of any year is likely to be considerably less than the number in January. In such states the 1920 figures may be somewhat too high for a fair comparison with 1910. It is probable, therefore, that a count of the hives of bees in April, 1920, would have shown a decrease, as compared with the number in 1910, rather than even a slight increase.

The states reporting the largest number of hives of bees on farms on January 1, 1920, were Texas, with 235,111; Tennessee, with 191,898; California, with 180,719; North Carolina, with 163,956; Illinois, with 162,630; Missouri, with 157,678; Kentucky, with 156,889; and Alabama, with 153,766. These eight states are the only ones which reported over 150,000 hives of bees in 1920. Tennessee showed the greatest absolute increase, with 47,417 more hives of bees in 1920 than in 1910, and Oklahoma was second, with 27,330 more hives in 1920 than in 1910.

The production of honey in 1919 was 55,251,552 pounds, as against 54,814,890 pounds in 1909, an increase of 0.8 per cent. The production of honey is fairly uniformly distributed throughout the United States. Six states reported more than 2,000,000 pounds of honey produced in 1919, as follows: California, 5,501,738 pounds; Texas, 5,026,095 pounds; New York, 3,223,323 pounds; Iowa, 2,840,025 pounds; Wisconsin, 2,676,683 pounds; and Colorado, 2,493,950 pounds.

The amount of honey produced in 1919 by the Northwestern states was as follows: Washington, 1,596,206 pounds; Oregon, 929,555 pounds; Idaho, 1,208,229 pounds; Montana, 630,608 pounds. On January, 1920, Washington had 56,906 hives of bees; Oregon, 45,264; Idaho, 35,000; Montana, 11,918.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street SALEM, OREGON

Phone Main 6018 for
ROGERS COMPANY
Rubber Stamps, Seals
Stencils

514 Gerlinger Building
Portland, Oregon

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
Salesmen everywhere. More wanted.

CORN HARVESTER Self Gathering for cutting Corn, Caus and Kaffir Corn. Cuts and throws in piles on harvester. Also and horse cuts and shocks equal to a Corn Binder. Sold in every state. Price only \$28 with fodder binder. The only self gathering corn harvester on the market, that is giving universal satisfaction.—Dexter L. Woodward, Sandy Creek, N. Y., writes: "3 years ago I purchased a Corn Harvester. Would not take 4 times the price of the machine if I could not get another one." Clarence F. Higgins, Speermore, Okla., "Works 5 times better than I expected. Saved \$40 dollars in labor this fall." Roy Apple, Farmersville, Ohio, "I have used a corn shocker, corn binder and 2 rowed machines, but your machine beats them all and takes less time of any machine I have ever used." John F. Haag, Mayfield, Oklahoma, "Your harvester gave good satisfaction while using filling our Silo." K. F. Ruegnitz, Otis, Colo., "Just received a letter from my father saying he received the corn binder and he is cutting corn and cane now. Says it works fine and that I can sell lots of them next year." Write for free catalog showing picture of harvester at work and testimonials.

PROCESS MFG. CO. Salina, Kansas

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.

WHAT IS YOUR INCOME?

**You Can Tell Uncle Sam
If You Keep Farm Records!**

**Tweed's
Cost
Records**



—will make it possible for you to comply with the law. A few minutes a day is all that is required to keep these simplest of records. No knowledge of bookkeeping is necessary. What would you think of a merchant who kept no books? You fruit growers are in a business as much as any merchant, yet many of you keep no records, and do not know where the leaks occur.

TWEEDS COST RECORDS have been worked out carefully by a man who was raised on a farm and knows from experience how little time a farmer has for bookkeeping. Hundreds of farmers are finding the **TWEED SYSTEM** simple and practical. Write today for full particulars, stating size and kind of farm you operate.

FARM SUPPLY CO.

281 Twelfth Street

Portland, Oregon

Save the roof and help save the building

Winter rains and winds are coming! Protect your buildings where the weather strikes hardest—the roof!

OTHER QUALITY PRODUCTS

especially prepared
for use on the farm.



Oronite Roof Paint

A high-quality protective coating for prepared roofing and metal roofs.

Mica Axle Grease

Gives a durable, smooth lubricating film under every pulling condition. Keeps the axle cool; no hot boxes, no gumming. The MICA makes it better.

Eureka Harness Oil

Preserves the original strength and life of leather and keeps it soft and pliable. Keeps harness "new looking."

Standard Hand Separator Oil

Correct Lubrication for your Hand Separator, under the conditions of high speed and close fitting parts.



ORONITE SHINGLE OIL *Preserves Shingles*

Drenching rains and whipping winds cause moisture and air to penetrate the fibre of unprotected shingles and cause disintegration and decay. The hot sun causes evaporation of the natural oils in the shingle fibre and cracking and warping occur. These results of exposure hasten the day when you must stand the cost of repairs or an entire new roof.

Use ORONITE SHINGLE OIL *on all shingles*

Oronite Shingle Oil is a high-quality preservative especially prepared to protect shingles against exposure and the effect of the elements. It is used on side walls as well as on roofs. It penetrates the shingle fibre with a moisture-resisting preservative. It retards the evaporation of natural oils in the wood, prevents cracking and warping and gives longer life to the shingles.

Examine your shingle roofs *now*. Last winter was one of the heaviest in the experience of the Pacific Coast. Your shingles need attention. Put them in condition to stand up under next winter's weather. An application of Oronite Shingle Oil *now* will save your roof and help save your building.

Oronite Shingle Oil may be readily mixed with colors. Our nearest agent will be glad to give you formulas.

STANDARD OIL COMPANY
(California)



ORONITE *means* QUALITY

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

SEP 19 1921

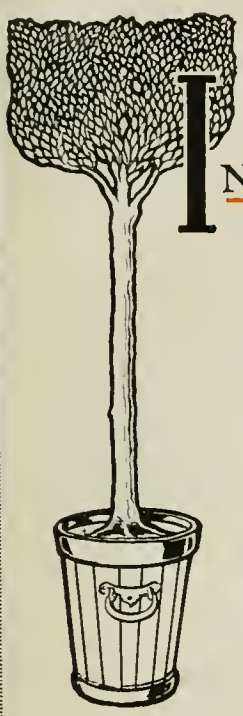
BETTER FRUIT

VOLUME XVI

SEPTEMBER, 1921

NUMBER 3

At Columbia Univ. Libr. 30 Dec 22



I N THIS ISSUE:

Making the Boxed Apple Safe for Delivery

By CURTIS STRONG
Manager Box Department West Coast Lumbermen's Ass'n

Picking for Flavor and Keeping Quality

By F. W. ALLEN
Assistant Professor of Pomology University of California

Power Farming's Victory in the Orchard

By H. M. BOLAND of the California Peach and Fig Growers' Association

Apple Packing House Needs of the Northwest

By Specialists of the Bureau of Markets, U. S. Dept. of Agriculture

Better Fruit's Standard Apple Packing Chart

An Up-to-date Guide for Grading and Packing Boxed Apples

20 Cts. the Single Copy

Subscription One Dollar per Year in the United States; Canada and Foreign, Including Postage, Two Dollars, Payable in American Exchange

BETTER FRUIT PUBLISHING COMPANY PUBLISHERS PORTLAND OREGON

T. J. POUPART

(John Poupart, William Ravenhill)

Convent Garden, London, W. C. 2

REGISTERED



TRADE MARK

The Largest Firm of Fruit Salesmen in Great Britain

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)
 COMMISSION THE EXCLUSIVE BASIS (Purchase propositions cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

We are pleased to announce that we have arranged for Sam Birch to again visit all our shippers. Correspondence can be addressed to him in advance, care of "Better Fruit" office.

Members of



Cables:
POUPART,
LONDON

Codes:
A B C
(5th Edition)
Marconi
International

Bankers:
Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.

SPECIAL NOTICE

We have now opened a branch at Liverpool which will be conducted on the same lines as London. Growers can communicate direct with the manager,

T. J. POUPART
54 Stanley St.
LIVERPOOL

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
 LOS ANGELES HARBOR

AND

LONDON—LIVERPOOL—HULL—ROTTERDAM—AMSTERDAM—ANTWERP—
 HAMBURG and HAVRE

From Pacific Coast Ports	Loading	From Europe	Loading
S. S. MOERDYK	Late August	*S. S. MOLIÈRE	Early September
S. S. NOORDERDYK	Late September	S. S. EEMDYK	Late September
*S. S. MOLIÈRE	Early October	S. S. KINDERDYK	Early October
S. S. EEMDYK	Early November	S. S. MOERDYK	Early November
S. S. KINDERDYK	Late November		

* Southampton and Glasgow only.

All Steamers Equipped with Large Coolrooms and Refrigerators for the Transportation of Fish, Fruit, Cheese and Other Perishable Cargo

For freight rates and space apply:

Oregon-Pacific Co., 203 Wilcox Bldg., Portland, Oregon—Main 4565

Has the Farmer a Real Grievance?

Yes, he has!

He has a real grievance because the prices he receives for his products have declined more than have the prices he must pay for almost everything he buys.

Because of these facts the farmers are not making as large profits as they believe they are entitled to make. Some blame their troubles largely on the railroads. "Freight rates," they say, "are the cause of low prices for grain and live stock."

The real cause lies much deeper. The decline in the prices of farm products began before freight rates were advanced, and would have occurred if freight rates never had been advanced. It is due to world-wide changes resulting from the transition from war to peace.

The Railways Have the Same Grievance as the Farmer

The rates the railways are getting, although they have been advanced, are much lower in proportion than the cost of almost everything the railways must buy.

High Costs Make High Rates

The average passenger rate is about 50 per cent higher, and the average freight rate about 74 per cent higher, than five years ago—in 1916, before this country entered the war.

From these facts it might be thought that the railways should be making money.

BUT—the prices the railways are paying for Materials and Supplies are now 65 per cent higher than in 1916;

Taxes are 90 per cent higher;

Coal per ton is 144 per cent higher; and

Wages of railway employees are still 124 per cent higher per hour.

In consequence of these things, while the total earnings of the railways are 60 per cent greater than in 1916, THEIR EXPENSES ARE 110 PER CENT GREATER and THEIR PROFITS, SINCE THE PRESENT FREIGHT AND PASSENGER RATES WERE MADE, HAVE BEEN LESS THAN ONE-HALF AS GREAT AS IN 1916.

What Has Happened to the Railroads Since 1916:



In 1916 railway wages were \$1,469,000,000. After the Railroad Labor Board advanced them last year they were at the rate of \$3,900,000,000, an increase of 165 per cent. The recent reduction ordered by the Labor Board was only 12 per cent, leaving wages about \$2,000,000,000 greater than in 1916.

Coal cost \$1.76 per ton in 1916, the total fuel bill being \$250,000,000. In 1920 the average price was \$4.20 per ton and the coal cost \$673,000,000, or \$423,000,000 more than in 1916. The average cost of railway coal is now \$4.29 per ton.

With prices of materials and supplies still 65 per cent higher than in 1916, the materials and supplies which the railways bought for \$447,000,000 in 1916 would now cost them \$750,000,000, or over \$300,000,000 more.

Present Railway Rates Chiefly Due to Labor Costs—Not to Return on Capital

Existing railway rates are higher not because railroad capital is receiving or seeking a larger return, but because railroad LABOR, and labor producing things the railroad must buy, is getting so much more than formerly.

EVERY INCREASE in rates since 1916 has been intended to meet—but has not met—these increased expenses, CHIEFLY LABOR, and NOT to increase profits.

Railway profits have GONE DOWN.

In 1916 the railroads earned 6 per cent. In 1921 they will be fortunate if, on present rates and present expenses, they earn 3 per cent.

A GENERAL reduction of rates now could not be made without BANKRUPTING most of the railways and making business of ALL KINDS much worse for everybody.

The managements of the railroads are making every effort to reduce expenses so that rates can be reduced later. Some reductions of rates already are being made.

There is NO OTHER WAY than by reductions in expenses to secure general reductions in rates that will not be ruinous to the railways and make them unable to render to the farmers the transportation service they need. Those who obstruct reduction of expenses not only hurt the RAILROADS but the FARMERS as well.

Association of Railway Executives

61 BROADWAY
NEW YORK

764 TRANSPORTATION BUILDING
CHICAGO, ILL.

MUNSEY BUILDING
WASHINGTON, D. C.

Those desiring further information on the railroad situation are requested to address the offices of the Association or the presidents of any of the individual railroads.

Ready for Use—Simply Stir
Into the Spray Solution

Spreado

THE PERFECT SPREADER

Anthracnose Needs Your Attention Now

Spray with Bordeaux 6-6-50 and add 1½ pounds of "SPREADO" to the 200-gallon tank.

"SPREADO" is highly recommended as a spreader by the Oregon Agricultural Experiment Station.

"SPREADO" increases the sticking power of your Bordeaux. Especially desirable in rainy sections as the spores of anthracnose continue to spread for some time.

"SPREADO" increases the wetting and covering power of your Bordeaux, making your spray go further, thus more than paying for itself in the saving of spray material.

DIRECTIONS

Start the agitator; begin filling tank; sift in gradually the required amount of "SPREADO," keeping agitator in motion until the tank is filled and spraying is begun.

Manufactured by

Miller Products Company

PORTLAND OREGON

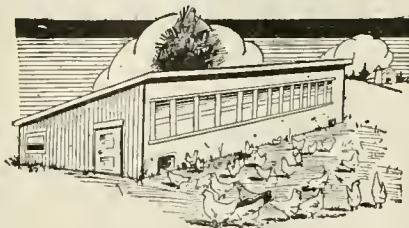
Sold by
Oregon Growers' Co-operative Association
Salem, Sheridan, Roseburg, Medford, Sutherlin,
The Dalles, Oregon

Eugene Fruit Growers' Association
Eugene, Cresswell and Junction City, Oregon
Hood River Apple Growers' Association
Hood River, Oregon

Horticultural Union
Yakima, Washington



Canker of Anthracnose on apple twig showing spore pustules in bark



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 inches wide by 25 inches high, 93c

A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 inches by 40 inches; price, glazed, \$2.50

This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, SEPTEMBER, 1921

NUMBER 3

Power Farming's Victory in the Orchard

By H. M. Boland of the California Peach and Fig Growers' Association

The prediction that the same economic forces that caused the horse to supersede the ox in the nineteenth century would displace the horse with the tractor is coming nearer and nearer fulfillment. In sections of the country where there are hard surfaced roads, the tractor and the motor car and truck have caused the abandonment of horses almost entirely while everywhere that the use of these agencies is at all practicable the use of horses is rapidly declining.—EDITOR.

POWER farming has achieved a signal victory in the fig growing sections of California which center in the city of Fresno. Its progress is shown in the universal adoption of the tractor for the cultivation and care of the vast tracts which are being planted to figs in the interior valleys of the state. An old venture in point of years, fig growing has recently assumed the dimensions of one of the state's foremost fruit industries and is characterized by the introduction of the most modern methods of culture, both through necessity and expediency.

Large tracts have been planted to figs in the past six years in California and with the progress made in bringing the fruit to a high point of quality, it is believed that in the near future, the state will supply the markets of the nation with American grown figs.

Practically every important fig orchard in the San Joaquin valley district is now cultivated by tractor rather than by old fashioned methods of horse and man power and the fact is doubly significant on account of the keen competition which is being met in the struggle between the old world and the new for the time-honored fig commerce.

Investigation by the U. S. Department of Commerce and others has established that the interior valleys of California are perfectly adapted to the culture of the fig. In soil, climate and in other natural characteristics it has been found that the difference between the California valleys and the favored sections of Asia and Europe

where heretofore the fig has reigned supreme is so slight as to hardly warrant distinction.

In establishing this fact, the greatest surprise was occasioned by an experiment in which a box of figs was dispatched to Smyrna, where fig growers of that section were loud in their praise of the product, claiming that the figs were not California grown, but Smyrna grown, and in some cases the orchards in Smyrna where the figs were supposed to have been grown were named.

WITH the establishment of the fact that in quality and appearance the fruit of the Pacific Coast could not be surpassed, the advantage in seeking the commerce of the nation has hinged on the possibility of producing as economically and an equal or better yield per acre.

It is believed that perfecting of tractor power for use in the orchards is going to play an important part in the development of this commerce in America and that this realization has been brought home to growers is indicated by the rapid adoption of tractors in orchard cultivation, one of the most important phases of successful fig growing. Fig trees, it has been found, can stand neglect in many ways, but for the sweet, wholesome fruit, such as California has developed in the past few years, intensive cultivation is an absolute essential.

The fig is grown in sections where the

hot summer sun and the cool nights impart to the fruit the flavor and high sugar content which has made it one of the most popular fruits with mankind for untold centuries. But the fig is a fickle fruit. An extra abundance of water will cause such rapid growth of the fruit that it swells and splits, making it unfit for commercial purposes. Extreme moisture also causes a fermentation which gives the fig a sour taste and deprives it of the exquisite aroma which has increased its popularity.

THE ideal fig country is where the moisture is retained uniformly in the soil, permitting the tree roots to take it as needed, but it must be ever present in sufficient quantities to insure a healthy condition.

It has been found that the only way to secure this uniformity is by intensive cultivation which forms a mulch, keeping the moisture from evaporating under the burning rays of the California sun and doing away with the capillary attraction that causes the moisture to evaporate through the tubular formation of sun-baked soil.

In Asia and Europe, the cheapness of man power makes it possible to cultivate intensively with comparatively little cost and with the crude implements that have been used for centuries.

In California it is different. With manual labor commanding four and five dollars a day, and sometimes inefficient at that, the progressive element among the orchardists



A battery of tractors at work in a 12,000 acre California fig orchard

turned to the tractor. It has been found in certain cases that one tractor, intelligently operated, dispenses with the services of several men. Actual accomplishment persuaded the orchardists that their salvation lay in the direction of tractor power and it has been almost universally adopted.

One of the pioneers in the use of tractors has been the J. C. Forkner Fig Gardens, the largest fig orchard in the world which is just coming into bearing. It is a 12,000 acres tract situated just outside of the city limits of Fresno and is one of the show places of California.

One of the secrets of the Forkner Fig Gardens has been tractor cultivation. It is evident that a 12,000 acre tract would require an army of men to care for it and give it the intensive cultivation that has been adopted as the best means of producing quality figs. Their system of culture calls for irrigation in mid-winter when the rainy season is at its height and through this aid to nature, the ground is saturated with moisture. As spring comes along and it becomes possible to turn the tractors upon the land, the battery of power cultivators is released and all during the hot summer months, the orchards are disced and cross disced giving the underlying soils the uniformity of moisture sought.

THIS year a battery of 87 tractors is employed which gives each tractor about 125 acres to care for. The trees are so pruned that a tractor with its disc cultivators can cover the orchard up to within a few inches of each tree and a foot or so about the base of the trunk is the only section of the orchard requiring hand cultivation.

It is believed that the employment of tractors on a large scale by the J. C. Forkner Fig Gardens will establish a new idea in the use of farm power in many sections. There are several hundred individual owners within the confines of the tract, but all the work of cultivation and care is done by this main organization, under contract to individuals. In some cases they are resident owners who are employed by what may be well termed an orcharding corporation, in other cases they are city dwellers raising figs as a hobby or investment.

The fig was one of the first fruits introduced into America, being brought by the Franciscan padres through Mexico in the 17th century. It was then established that the fig would thrive in California. It was not until the last ten years, however, that tractors has been the J. C. Forkner Fig Gardens commercially profitable.

A great measure of its obscurity no doubt was due to the lack of intensive cultivation. The era of the tractor made intensive cultivation possible and the fig has gone forward by leaps and bounds. It solved the secret of the quality fig and this quality is winning recognition. It is through the "quality fig" that California hopes to win

the markets of the world and it is through greatly improved cultivation made possible by tractor power that the orchardist has been able to bring the fruit to its present high standard.

LAST fall the fig growers affiliated with the peach men in an association known as the California Peach & Fig Growers with 8,000 members. The association will take the marketing cares off the shoulders of the growers leaving them free to devote their energies to improving their product.

One of the first institutions of co-operative endeavor to be established was a "growers' school." The orchardists traveled over the fig belt studying methods of culture employed in both successful and un-successful orchards. At the J. C. Forkner Fig Gardens several hours were spent watching demonstrations of cultivation methods, a feature of which was the performance of the tractor battery. Those that marveled at the growth and appearance of the mammoth acreage were initiated into the secret of tractor cultivation and the efficiency and economy of the operation which is making this modern "Garden of Eden" a success.

Fire Blight

REPORTS from various sections in the Northwest to the effect that fire blight is spreading make it necessary to exercise the utmost vigilance to detect it in its first stages and then to use the most efficient and drastic methods to eradicate it. Owing to the rapidity with which this most disastrous of tree diseases gains a foothold and progresses, growers should become informed of its advance symptoms and be on the alert against it.

In describing the presence of fire blight H. P. Barss, professor of the department of botany and plant pathology of the Oregon Agricultural College, says that it is first noticed by a wilting of the blossoms and leaves on the fruit spurs or the young shoots. Drying up of the branch and foliage soon follows this action. Later the infected parts become black or brownish, giving the appearance of having been scorched by fire—hence the name fire blight.

As the disease progresses it often runs down from the tender growths to the larger branches, main limbs and trunks of the trees and into the root system. The bacteria also often enters the roots from the suckers. The final result of the blight is to girdle the part attacked. In fact, so destructive is this disease to an orchard, if not checked, that within three or four years from its first appearance, in the severest cases, the trees have to be removed. Pear trees are particularly susceptible to fire blight and some varieties of apple trees more so than others. The Spitzenburg, for instance, has been found to be highly susceptible while other varieties, notably the Newtown, are more resistant. Growing seasons when moist, warm weather prevails

are favorable to the infection and spread of fire blight.

Many remedies have been tried for eradicating this disease, but once it has gained a strong foothold, the only method that has been successful is that of cutting it out. As a preventive in its incipient stages some degree of success has been attained by the use of special sprays for this purpose.

IN CUTTING out fire blight all the affected parts should be removed and also some of the area around the infection. The work above ground should be followed by a careful inspection below the surface. This should be done by digging the dirt away from the base of the trunk of the tree to determine if blight discoloration is present. If it is the cutting out process should be applied to the base and roots of the tree as carefully as the portion above ground. As the disease is highly infectious the wounds made in cutting should be disinfected with a solution consisting of one gram of cyanide of mercury and one gram of bichloride of mercury to 500cc of water, while all tools used in cutting or pruning trees affected with fire blight should also be disinfected.

The orchardist whose trees may be subjected to an attack of this disease will be well repaid by scrutinizing them frequently and carefully and applying remedial methods at once if they become infected.

Must Remove Spray

SHIPPERS and growers of fruit in the Northwest who do not want to take a chance on having their fruit condemned will remove spray residue. The United States Department of Agriculture has issued a ruling to the effect that fruit having spray on it will be condemned. The ruling was made after fruit growers at Medford had complained to the department that a federal inspector was working a great hardship on Southern Oregon growers by requiring them to remove the spray. When complaint was presented to the department the action of the inspector was upheld and fruit shippers and growers warned that the spray must be removed.

Oregon's apple crop this year is estimated by F. L. Kent of the Bureau of Crop Estimates to be 5,139 cars. The 1921 pear crop of the state is placed at 8,000 tons and the prune crop at 21,610,000 pounds.

Thank You!

"I could not afford to do without Better Fruit any more than I could do without my sprayer. They are both specialists in their respective callings."

—Excerpt from letter of J. R. Allen, Neppel, Wash.

Making Boxed Apples Safe for Delivery

By Curtis Strong, Manager Box Department West Coast Lumber Co.

THE importance of better made apple boxes is of particular interest to dealers and shippers of the Pacific Northwest this season. If plans of the Northwest committee on water transportation work out as predicted at this time, a total of \$20,000,000 worth of boxed apples will move from

the box is increased more than fifty per cent.

It was further demonstrated at the laboratory that six six-penny cement coated nails in each side nailing edge will give decidedly better results than the nailing method represented in the guide issued by the

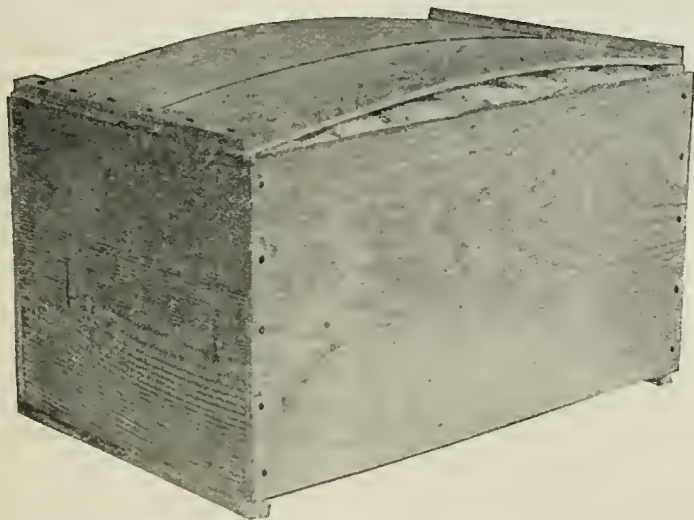
strapped boxes were received in excellent condition.

Losses common to transportation of farm products by both water and rail have been increasing each year. Recent investigation of hundreds of damage claims against the railroads convince marketing officials that these losses could be eliminated and the railroads saved continual annoyance and expense in settling claims if more care were used in packing, nailing and strapping.

Loss and damage claims reported by the Consolidated Freight Classification estimated for 1919, due to improper nailing and lack of strapping, was over \$100,000,000.

It has been demonstrated that the slight expense for two three-eighth-inch flat straps, applied just inside the cleats, drawn tight and sealed is warranted, in view of the increased strength of the box. The application of straps permit rough handling, prevents pilfering and prevents loss and damage to the contents.

The Pacific Northwest grower and dealer in apples does not find the objection to the use of the corrugated metal fasteners as has been the case in previous years. Since manufacturers have installed proper machinery for this work, the work is done so much more efficiently than is possible to do it by hand there is no serious objection to the use of metal fasteners. A recent order of 50,000 apple boxes placed in the Pacific Northwest specified that ends could be 75 per cent two-piece stock if properly fastened with corrugated metal fasteners.



Proper Nailing of Standard Northwest Apple Box

the Pacific Northwest to Eastern and Gulf markets in the intercoastal steamships equipped with refrigerator space.

Preliminary but reliable estimates indicate that there will be an excess of 30,000 carloads of apples produced in the country tributary to Seattle and Portland ports, and if rates tentatively promised by the steamship companies are put into effect together with adequate cooling space, as carriers have promised in return for pledges of 4,000 carloads of fruit to be shipped, it is reasonable to expect that a much larger number of cars will move to these ports for shipment by water.

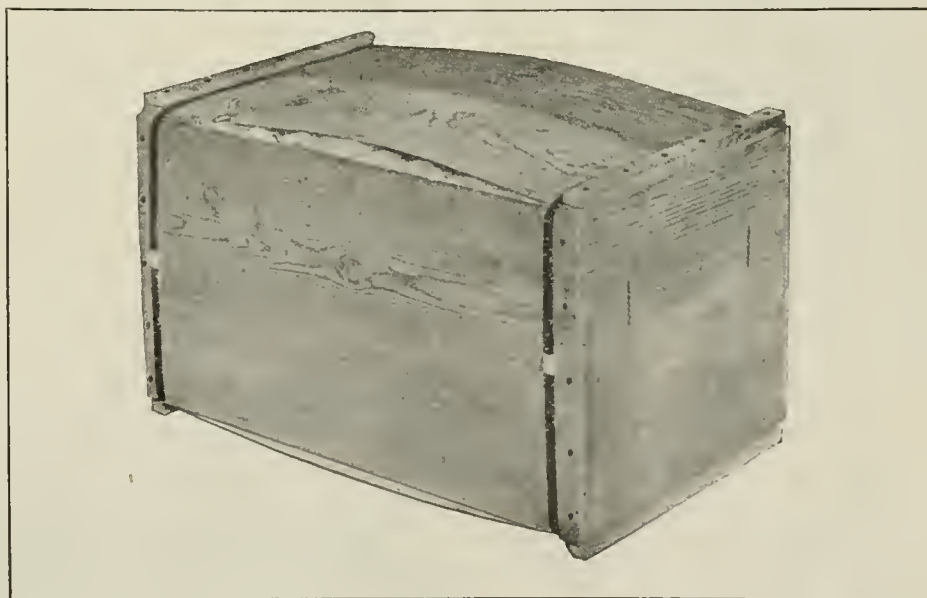
In co-operation with growers and dealers the box department of the West Coast Lumbermen's Association has prepared a very complete mailing guide covering the fundamentals in preparing shipments for safe delivery. This consists of an eight-page letter enclosure, featuring half-tones of a properly nailed box and also one of a box properly nailed and strapped for shipment by water.

It has been very clearly demonstrated at the laboratory of the United States Forest Service at Madison, Wisconsin, that the average wooden box is made from sufficiently heavy lumber, but failure and damage losses are largely due to insufficient care in proper preparation of packages.

The data shown in the mailing guide is based on tests made at the Forestry Products Laboratory at Madison. It is very interesting to note that with one extra nail added to each nailing edge the strength of

the Pacific Northwest to Eastern and Gulf markets in the intercoastal steamships equipped with refrigerator space.

On a recent shipment of 30,000 boxes of apples from the Pacific Northwest through the canal to England, the American Agricultural Trade Commission at London reported that there would have been no breakage whatsoever had there



Proper Strapping of Apple Box for Waterborne Shipments

been a few more nails used in the nailing of the shooks.

Last season over 2,000,000 boxes of apples were strapped and shipped from the Pacific Northwest. Reports received from foreign ports showed that all properly

The president of the Hood River Apple Growers' Association recently reported that it has received 15 cents additional per box for apples on the New York auction market, due to the fact that they use nothing but

(Continued on page 19)

Picking for Flavor and Keeping Quality

By F. W. Allen, Assistant Professor of Pomology, University of California
Formerly in Charge of Storage Investigations in the Northwest, Bureau of Markets,
Department of Agriculture

WHILE the general topics of how to grow, prune and spray orchard trees are important and by their nature essential as a basis for success, yet these long discussed fundamental problems are gradually giving place to more specific topics or phases of these subjects, which in one way and another have to do not only with increased production, but with placing on the market and into the hands of the consumer a product of increasing high quality.

The reputation of the Northwest apples is not based upon the large number of cars shipped to the Eastern markets, certainly not upon the closeness, or rather remoteness, of the fruit-producing districts from those markets, but rather upon the superior class or quality of the fruit produced. The apple is a fruit having wide distribution. It can be produced in many sections, some of which have material marketing advantages over the Northwest, and today the question of transportation and marketing is proving to be a problem of very vital importance.

Thus with the competition of other sections which may be able to produce and market apples at less cost, there is only one reason why the Eastern trade demands Western apples. It can be summed up in the word "Quality," and quality implies superiority.

A superior product has no competition and under any kind of normal conditions will always bring what it is worth. The consumer, however, is becoming more and more critical. The standard of quality today is different from what it was yesterday; and, furthermore, the grower may have a higher opinion of his fruit than does the buyer. This comes about quite often owing to the changes which may take place in the fruit in transit. The grower must anticipate the appearance and quality of his fruit at the time it is exposed for sale on the distant markets.

BY "quality" one may first think of size, freedom from blemishes or fine, attractive color. These are all attributes of quality, but quality itself is generally thought of in connection with the flavor and texture of the flesh. Thus fruit purchased solely on appearance may sometimes prove disappointing. Apples of high desert quality may prove in some cases of poor quality for culinary purposes, while some of the leading varieties for baking should not be selected to eat out of hand. Each variety has more or less of a characteristic flavor which is soon recognized, and it is, of course, not within the grower's power to transform a Ben Davis into the quality of

a Spitzenburg. It is, however, within his power to influence the quality of his apples to a certain extent, and the relation between the time of picking and quality is one of the factors now receiving considerable attention.

It is assumed that there are very few fruit growers who do not remember at some time in their lives of harvesting and eating a goodly number of apples considerably in advance of the normal picking season. Doubtless these were all pronounced of fine flavor at the time, but since one's taste generally changes we now recognize that the real characteristic flavor is not noticeably present early in the spring, but develops later in the season as the apple ripens or passes through certain chemical changes. Chemical analysis shows that the growing apple, aside from being 80 to 85 per cent water, contains some 3 to 4 per cent of starch and from 10 to 20 per cent sugar; also small amounts of malic acid, tannin, cellulose and esters. While all of these constituents bear a certain relation to dessert quality, yet the one which seems of primary importance in connection with flavor and aroma is the small quantity of esters or flavoring oils. While the relative amount of acid present determines whether the apple will be classed as sprightly sub-acid or sweet, yet it is the flavoring oils, concerning which we still know but little, that give the variety its particular taste.

AS mentioned above, during the growing period the apple has little flavor; the esters are not present, but there is found considerable starch, a quantity of tannin and a relatively high percentage of acid. The apple is sour and starchy. After full size is obtained the fruit gradually enters a second period, or ripening stage, when the tannin and astringent taste disappear, the acid decreases and the starch changes into sugars. It is in the latter part of this period that the flavoring oils are present in greatest quantity and the apple is in prime condition for eating. The length of time which the fruit remains in this stage depends both upon the variety and the manner in which it has been handled or stored. At best, however, it is a short period, as even cold storage, which checks life processes, cannot entirely stop them. After reaching full ripeness the fruit passes into a subsequent period of decline and decay. The flesh breaks down, becomes mealy and there is a loss of the sugars and flavoring oils. With the apple a living organism passing through the above changes, at what time should it be harvested for highest quality?

We usually speak of picking fruit when it has reached maturity, but maturity in this

sense is quite different from best eating conditions, or, as we generally say, "ripe." Most fruits, the pear excepted, are regarded as being of better flavor when allowed to ripen on the tree or vines. This practice can be followed with some early apples, where they are grown for local markets. In the case of fall and winter varieties—the leading commercial sorts—it is, of course, impossible to allow the fruit to reach its maximum degree of flavor before harvesting. We do know, however, that certain varieties, the Delicious being a notable example, if picked before reaching its normal color, does not have a flavor that at all coincides with the name of the variety. It is certainly safe to say that picking before the fruit has developed its normal size and color will prove to be at the expense of quality. We cannot allow the fruit to become ripe, but it should be allowed sufficient time to reach its proper stage of maturity. The importance of proper maturity cannot be emphasized too strongly. To try to state dates in this connection would be useless. The time of picking is exceedingly variable and can only be ascertained by careful discrimination on the part of the grower. Numerous factors may be taken into consideration to determine when the apple has reached proper maturity for picking. The U. S. Department of Agriculture believes that the most reliable single indication is the "ground color" of the fruit. This ground color, which is green when the fruit is immature, begins to whiten or yellow slightly as the fruit reaches maturity. With such a variety as the Winesap, where the red over-color most often entirely covers the green ground, this factor would be of little value.

IN considering the time of picking for flavor it should always be kept in mind that the fruit must be well grown. A poorly grown, poorly fed or under-watered tree cannot produce apples of flavor, whether they are picked early or late. The apples must develop properly. If the size is small, let us examine the soil for its supply of water or food elements; if the color is lacking, pruning is needed. Thus picking for flavor goes hand in hand with growing for flavor.

It is interesting to note that evidence seems to indicate that a relatively cool atmosphere is desirable for the development of high flavor. Summer and early fall apples do not as a rule possess high flavors, and Stewart found that the late fall and winter apples grown so far south that they ripen before cool weather comes on are likely to be lacking in this regard. On the other

(Continued on page 20)

Apple Packing House Needs of the Northwest

By Specialists of the Bureau of Markets, U. S. Department of Agriculture

"The construction of well-planned and well-equipped packing houses is essential to the economical handling of boxed apples in the Northwest. The recent building program has not kept pace with the demand of the industry, and severe losses have been sustained on account of limited facilities for packing and for storing unpacked fruit temporarily. The situation has been aggravated by the enormous increase in production during the past few years, as well as by the serious shortage of transportation equipment."



Small type of frost proof Northwest apple packing house. Although constructed of tile, this type of house is both poorly lighted and ventilated.

SPECIALISTS of the Bureau of Markets and Crop Estimates, United States Department of Agriculture, thus sum up the results of their study of methods and practices which have given the greatest satisfaction in commercial operations. Full details of the work are contained in Farmers' Bulletin 1204, Northwestern Apple Packing Houses, recently issued by the department.

Apple packing houses may be classified in two groups, individual packing houses, which are more commonly known as ranch packing houses, and community houses, operated either by co-operative associations or by individuals. The percentage of the crop packed in community houses is increasing steadily, and though no definite figures are available, careful estimates show that the amount increased from about one-fourth of the total crop in 1916 to approximately one-half of the crop in 1919.

The same basic principles of construction and equipment apply to all types of houses, and the equipment and methods of operations in an orderly way, moving in one direction from the receiving point to the storage or car.

COMMUNITY packing houses are especially desirable in the apple-growing districts of the Northwest, where the acreage is usually concentrated in the river valleys, and where individual holdings with few exceptions are small, ranging from 5 to

15 acres. A group of growers by joining forces may easily finance the erection of a modern packing establishment. In a community house it is possible to perfect an organization of trained men to bring the grading and packing operations to a uniform high standard. The operations are generally on a scale large enough to warrant the employment of competent workmen to supervise the various operations, and the cost of inspection is greatly reduced by having this work done at a central point. The cost of packing in a community house is not always lower than where the work is done by the individual, but it usually can be done more rapidly.

One important factor in favor of central houses is better conditions for the employment of labor. Very few of the smaller ranches have adequate housing and subsistence facilities for the care of their additional help during the packing season. Some growers have tried hauling the packers back and forth from town each day, but this practice is not satisfactory because much time is lost on the road. Then, too, help is usually at such a premium that if one person is tardy in reporting, the grower will detain the rest of the crew awaiting his arrival. As the work is generally paid by the piece, the workers are inclined to seek employment where they can put in full time and have comfortable living quarters.

THE best site for a ranch packing house usually is found near the residence and other farm buildings, close to the main traveled road. Such a location is particularly desirable where there is a common storage house in connection with the packing house, as the storage house is usually air-cooled and requires the attention of some one to operate the ventilators during the storage season. If the house is a great distance from the ranch house it is less likely to be cared for properly.

Wood, brick, concrete, or tile are used in the construction of packing houses, the choice of materials being determined by the cost and the fire risk. As the packing and storage rooms are usually parts of the same building, the same material is ordinarily used in its construction, although the storage room is insulated, and the packing room is not.

The most important feature in the construction of the packing house, but the most commonly neglected, is the arrangement for proper lighting. The most efficient work is possible only when the room is properly illuminated at all times. Most people understand that dim lighting interferes with the accuracy and efficiency of grading operations, but comparatively few realize that the glare of a direct light is equally bad. Hipped-roof skylights and high windows in sufficient numbers to light the interior thoroughly are the most satisfactory methods of lighting. The hipped-roof skylight is preferable to a straight, plain glass, as the style of construction permits it to receive light throughout the day.

THE successful co-ordination of the many different operations involved in packing Northwestern boxed apples requires in each case a study of local conditions. It is impossible to lay down certain principles which should be followed always; but where it is necessary to determine precisely what style of construction or type of equipment is best suited to the particular needs each packing house becomes a separate prob-

(Concluded on page 21)



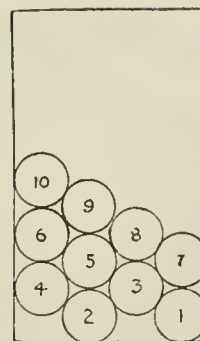
Large type of Northwest apple packing and air cooled storage house. Only the latter, however is frost proof

Better Fruit's Standard Apple Packing Chart

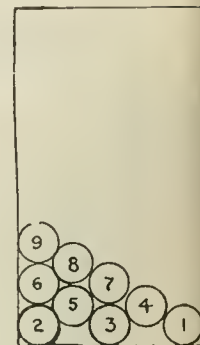
All packs to go in the Northwest Standard Box—10½x11½x18 inches inside measurement

THE apple grading rules and regulations used in connection with the packs illustrated below are the new ones adopted for 1921 by the State Agricultural Department of Washington and are largely the same as those that are used in Oregon, Idaho and Montana with slight variations in the grading. All the packs here described are for the standard apple box measuring 10½x11½x18 inches inside measurement. A description of all packs not illustrated can be found under the heading "Apple Packs."

All apples packed under these regulations shall be arranged in the container according to approved and recognized methods and all packages shall be tightly filled, but the contents shall not show excessive or unnecessary bruising as a result of the pressure exerted in enclosing an over-filled package. Each packed box must show a minimum bulge of one-half inch on both top and bottom. Any apples wrapped shall be well wrapped to prevent "flagging."

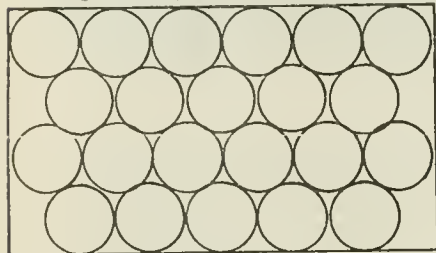


How to start a 2/2 diagonal pack

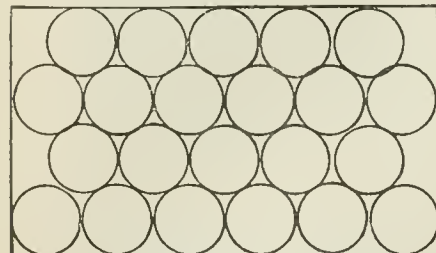


How to start a 3/2 diagonal pack

Diagonal 2/2 pack, 4 layers, 88 apples

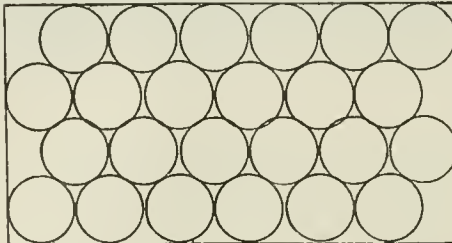


First and third layers

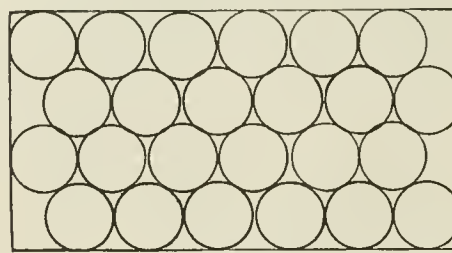


Second and fourth layers

Diagonal 2/2 pack, 4 layers, 96 apples

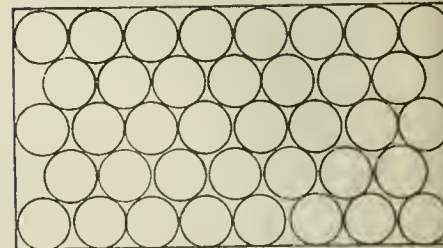


First and third layers

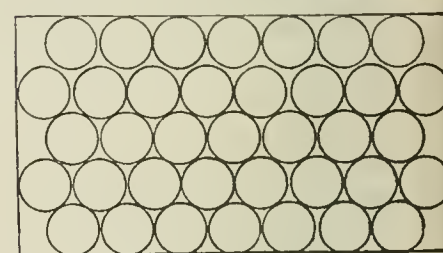


Second and fourth layers

3/2 pack, 4½ tier, 5 layers, 188 apples



First and third layers



Second and fourth layers

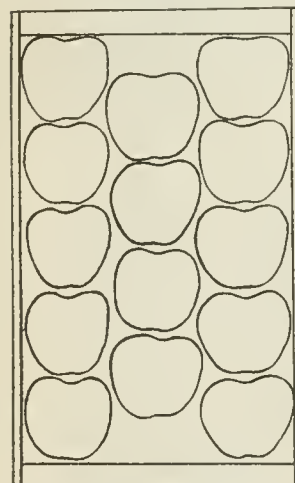


Figure 1—41 apples

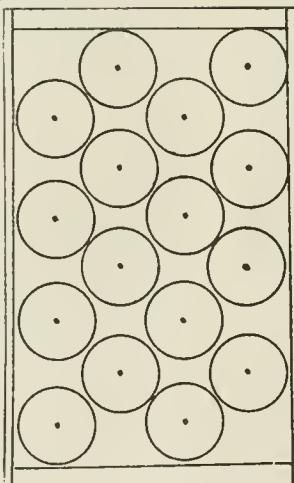


Figure 2—64 apples

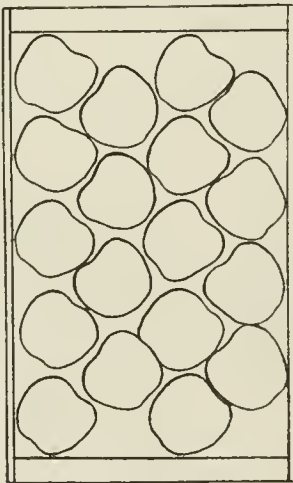


Figure 3—72 Apples

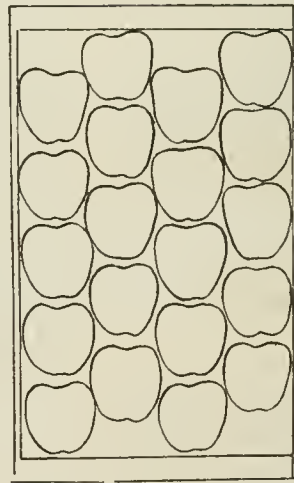


Figure 4—30 apples

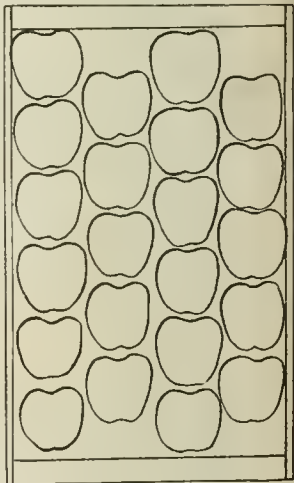


Figure 5—88 apples

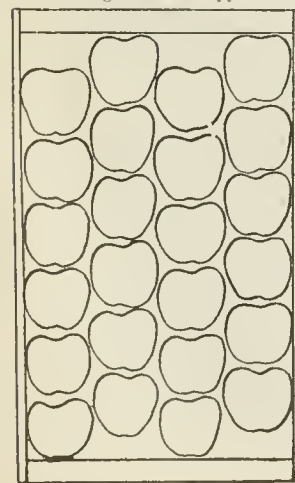


Figure 6—96 apples

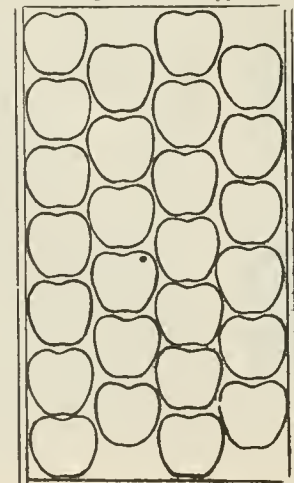


Figure 7—104 apples

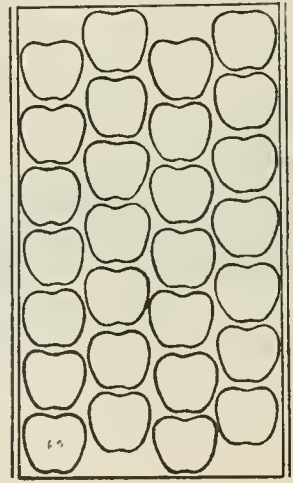


Figure 8—112 apples

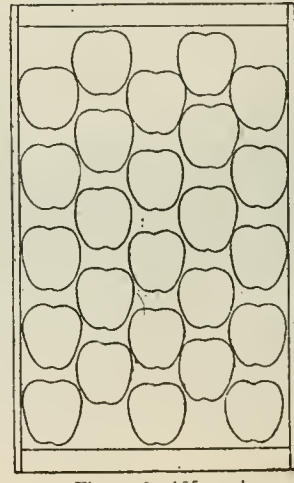


Figure 9—125 apples

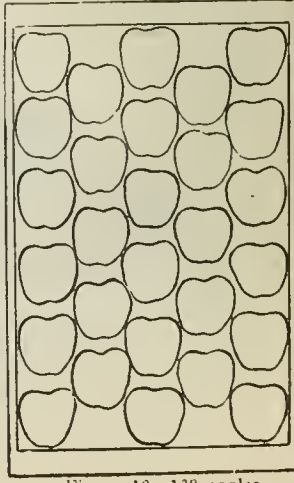


Figure 10—138 apples

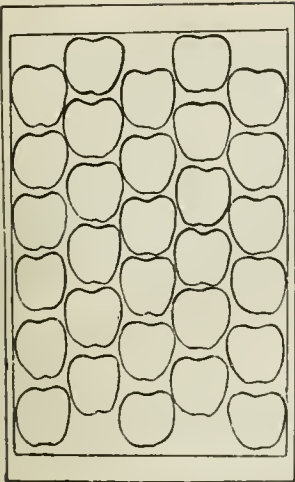


Figure 11—150 apples

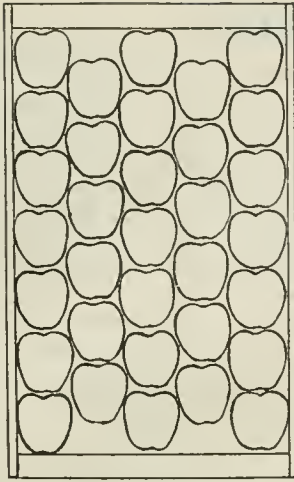


Figure 12—163 apples

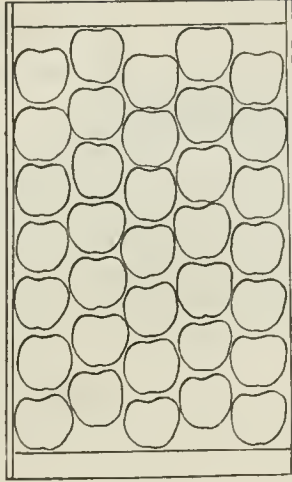


Figure 13—175 apples

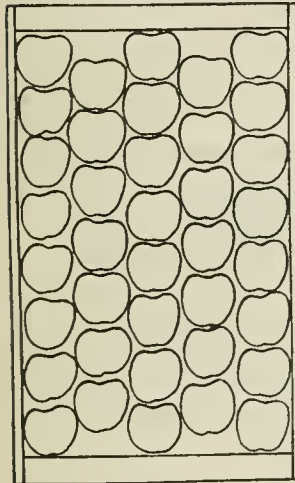


Figure 14—188 apples

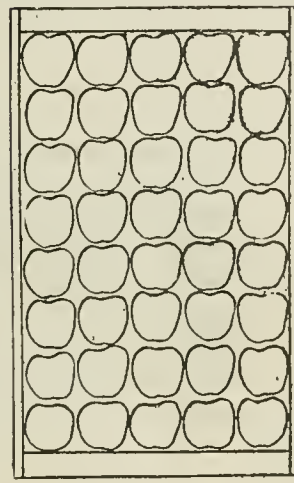


Figure 15—200 apples

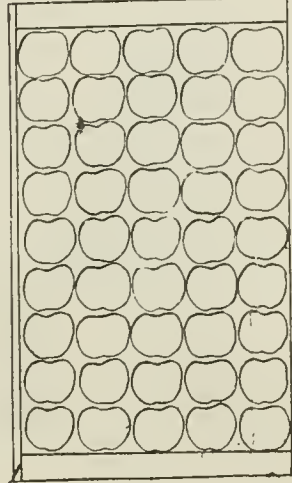


Figure 16—225 apples

Apple Grading Rules—Season 1921

Extra Fancy—Extra Fancy apples are defined as sound, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and holes, spray burns, limb rub, visible watercore, skin punctures or skin broken at stem, but slight russeting within the basin of the stem shall be permitted.

Fancy Grade—Fancy apples are defined as apples complying with the standard of Extra Fancy Grade, except that slight leaf rubs, scratches, or russeting shall be permitted up to a total of ten per cent of the surface, and provided that scab spots not larger than one-quarter inch in diameter in the aggregate shall be permitted in this grade.

"C" Grade—"C" Grade is to include all other merchantable apples free from infection except apples with bruises in which the skin is broken or bruises larger than one-inch in diameter. Healed stings to be allowed. Apples showing effects of freezing will not be admitted under this grade. Apples of this grade must not be marked "Choice."

Combination Grade—When Extra Fancy and Fancy apples are packed together the boxes must be marked "Combination Extra Fancy and Fancy." When Fancy and "C" Grade apples are packed together the box must be marked "Combination Fancy and 'C' Grades." Combination grades must contain at least 25 per cent of apples which are of such grade as would be permitted in the higher grades. None of the higher grade apples shall be sorted out of any lot and the remainder packed as combination grade.

Orchard Run—When Extra Fancy, Fancy and "C" Grade apples are packed together the boxes must be marked "Orchard Run," but Orchard Run apples must not contain any fruit that will not meet the requirements of "C" Grade. It shall be unlawful to remove any of the higher grade apples from any lot and then pack the remainder as "Orchard Run."

COLOR REQUIREMENTS

Apples shall be admitted to the first and second grades subject to the following color specifications. The percentage stated refers to the area of the surface which must be covered with a clear shade of red characteristic of the variety:

SOLID RED VARIETIES		
	Extra	Fancy
Alken Red	75%	25%
Arkansas Black	75%	25%
Baldwin	75%	25%
Black Ben Davis	75%	25%
Detroit Red	75%	25%
Gano	75%	25%
King David	75%	25%
Red June	75%	25%
Spitzenburg Esopus	75%	25%
Spitzenburg Kaigu	75%	25%
Vanderpool	75%	25%
Winesap	75%	25%
McIntosh Red	66 2/3%	25%
STRIPED OR PARTIAL RED VARIETIES		
	Extra	Fancy
Delicious	66 2/3%	25%
Stayman Winesap	66 2/3%	25%
Black Twig	50%	25%
Ben Davis	50%	15%
Bonum	50%	15%
Fameuse	50%	15%
Geniton	50%	15%
Hubbardston	50%	15%
Jonathan	66 2/3%	25%
Limburtwig	50%	15%
Missouri Pippin	50%	15%
Northern Spy	50%	15%
Ontario	50%	15%
Red Astrachan	50%	15%
Rainier	50%	15%
Rome Beauty	50%	15%
Salome	50%	15%
Stark	50%	15%
Sutton	50%	15%
Willow Twig	50%	15%
Wagener	50%	15%
Wealthy	50%	15%
York Imperial	50%	15%
Alexander	25%	10%
Chenango	25%	10%
Gravenstein	25%	10%
Jefiries	25%	10%
King	25%	10%

Oldenburg	25%	10%
Shiawassee	25%	10%
Twenty Ounce	25%	10%

* No color requirement on Fancy Rome Beauty 96 and larger.

RED CHEEKED OR BLUSHED VARIETIES
Extra Fancy—Perceptibly blushed cheek.
Fancy—Tinge of color.

Hydes King
Maiden Blush
Red Cheek Pippin

GREEN AND YELLOW VARIETIES
Extra Fancy—Characteristic color.
Fancy—Characteristic color.

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

SUMMER AND EARLY FALL VARIETIES

Summer varieties such as Astrachan, Bailey's Sweet, Beitzheimer, 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 and marked in accordance with the grading rules covering Fancy Grade as to defects but regardless of color.

APPLE PACKS

Style of Pack—Diagonal	No. in Box
2x1 wide 4-4 long, 3 tier deep	36
2x1 wide 5-4 long, 3 tier deep	41
2x1 wide 5-5 long, 3 tier deep	45
2x1 wide 6-5 long, 3 tier deep	50
2x2 wide 3-3 long, 4 tier deep	48
2x2 wide 3-4 long, 4 tier deep	56
2x2 wide 4-4 long, 4 tier deep	64
2x2 wide 4-5 long, 4 tier deep	72
2x2 wide 5-5 long, 4 tier deep	80
2x2 wide 5-6 long, 4 tier deep	88
2x2 wide 6-6 long, 4 tier deep	96
2x2 wide 6-7 long, 4 tier deep	104
2x2 wide 7-7 long, 4 tier deep	112
2x3 wide 7-8 long, 4 tier deep	120
2x2 wide 8-8 long, 4 tier deep	128
3x2 wide 4-4 long, 5 tier deep	100
3x2 wide 5-4 long, 5 tier deep	113
3x2 wide 5-5 long, 5 tier deep	125
3x2 wide 6-5 long, 5 tier deep	138
3x2 wide 6-6 long, 5 tier deep	150
3x2 wide 7-6 long, 5 tier deep	163
3x2 wide 7-7 long, 5 tier deep	175
3x2 wide 8-7 long, 5 tier deep	188
3x2 wide 8-8 long, 5 tier deep	200
3x2 wide 9-8 long, 5 tier deep	213
3x2 wide 9-9 long, 5 tier deep	225
3x3 wide 5-5 long, 6 tier deep	180
3x3 wide 5-6 long, 6 tier deep	198
3x3 wide 6-6 long, 6 tier deep	216
3x3 wide 7-6 long, 6 tier deep	234
3x3 wide 7-7 long, 6 tier deep	252
5 straight pack 8 long, 5 tier deep	200
5 straight pack 9 long, 5 tier deep	225

DIMENSIONS OF STANDARD APPLE AND PEAR PACKAGES

The standard size of an apple box shall be 18 inches long, 11½ inches wide, 10½ inches deep, inside measurement.
Pear—18x11½x8½ inches, and outside length 19¾ inches.
3½ inch suitcase pack Peach-Plum—18x11½x3½ inches.

APPLE BOX MATERIALS

Ends—¾x10½x11½, 2 pieces	20 to Bdl.
Sides—¾x10½x19½, 2 pieces	40 to Bdl.
T. & B.—¼x5½x19½, 4 pieces	100 to Bdl.
Cleats—¾x¾x11½, 4 pieces	100 to Bdl.
32 6d nails commonly used per box.	

RULES FOR ESTIMATING PAPER AND CARDBOARD

	Apples	Pears
Wraps for packing		
100 boxes	50 lbs.	25 lbs.
Lining for packing		
100 boxes	7½ lbs.	7½ lbs.
Cardboard for packing		
100 boxes	16 lbs.	

RULES FOR USE OF PAPER

Apples—	
Use 8x8 for 188-299-213-225 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 210-228-245 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.	

CEMENT COATED NAILS

Per keg: 4d, 55,000; 5d, 39,700; 5½d, 31,000; 6d, 23,600.

The Importance of Plant Quarantines

By Charles A. Park, Chairman Western Plant Quarantine Board
Delivered at Meeting of Northwest Horticulturists

THE importance and value to the crop producers of the Pacific Coast, of the inception, the issuance and enforcement of plant quarantine is a matter entirely too comprehensive to be compressed into the space and time allotted to that subject upon the current program, and what is to follow must be recognized and accepted as the merest outline of the purpose, practice and result of the attempts to maintain plant quarantine on the Pacific Coast.

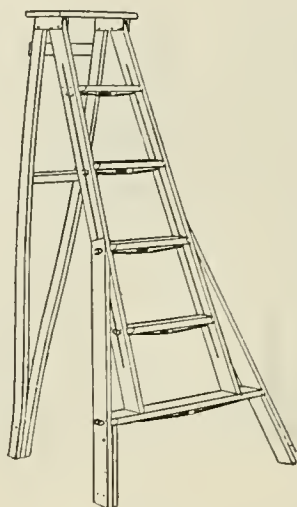
The carefully considered and diligently enforced plant quarantine orders issued by Pacific Coast States up to date, have, in a large measure, resulted in keeping the fruit an dmelon flies out of our orchards and truck farms; in keeping the gypsy and brown-tail moths out of our forests and the blister-rust away from our five leafed pine trees. The Oriental peach moth, now well established in other sections of the United States, has been kept out of the orchards of the Pacific Coast by the application of close quarantine inspection, and the same may be said of the Japanese beetle. The ravages of the chestnut bark disease, the Eastern filbert blight and the European corn-worm, together with the restrictions they cause to be placed upon these crops, are things we read about in the official publications of some of the Eastern states, but thanks to the effect of plant quarantine the producers have no actual experience of these virulent crop pests upon the Pacific Coast. The Mexican cotton-boll weevil and the pink boll-worm of cotton—both introduced insect pests—in addition to greatly reducing the annual output of this staple, are causing the issuance of the most drastic and far-reaching federal and state laws, rules and regulations directed against the cultivation and movement of

the cotton plant and its various products. The cotton fields of the Pacific Coast states are clean and free of both of these pests, and also free of the burden and loss that would surely follow their introduction and establishment. The sweet potato weevil has

not as yet become established on the Pacific Coast, yet the pest is a regular immigrant and a common acquaintance of the quarantine inspector. The potato wart disease still remains with one exception, in its native habitat, and finally our knowledge of the citrus canker, the most destructive scourge of the citrus industry, is still confined to what we read in the official bulletins of the state of Florida.

A Dependable Ladder

Made of clear well seasoned spruce, it is light and strong.



THE HARDIE

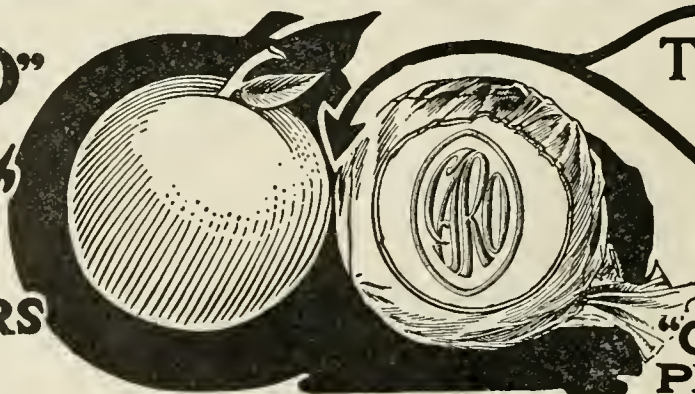
Designed especially for orchard work with wide spreading side legs and a rod reinforcement under each step. This strong, rigid construction gives your picker confidence and a wider range of picking. Its use soon saves its cost. Hardie ladders and other orchard devices are fully described in our free catalog, which is mailed on request.

The Hardie Manufacturing Co.

55 N. Front Street

Portland, Oregon

"CARO"
fruit
WRAPPERS



"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

ALL of the above mentioned crop pests except the fruit flies have become well established in the United States east of the Rocky mountains, and were introduced into that territory before the adoption and enforcement of plant quarantine regulations by the several states concerned. Not one of the above mentioned crop pests has become established in the Pacific Coast states, yet since the inauguration and enforcement of plant quarantine regulations on this coast each and all of these crop pests with the one exception of the European corn-worm have been repeatedly intercepted in imports of plant products and destroyed by the local plant quarantine inspectors.

The true value of plant quarantines to the crop producers of the Pacific Coast can be summed up in the following simple sentence. The present unchallenged entrance of our crop products into the markets of the world. Such an enviable condition is by no means common to the crop producers of the world at large; in fact, it constitutes a very rare exception.

CONSIDER the alternatives. The markets of the world promptly closed to our entire fruit crop. The introduction and establishment on the Pacific Coast of the Mediterranean fruit fly would be sufficient cause to create such a situation. If this omnivorous pest should gain an entrance, either by accident or laxity in enforcing quarantine regulations, every fruit growing state in the Union and all other fruit growing countries would promptly apply, in fact would be compelled to apply, for their own protection, the same prohibitive regulations against the importing or bringing into or through their territories of all of our fresh fruits, as are now in force and enforced against the territory of Hawaii and other countries infested with this pest.

Any serious contemplation of the possibilities of evil or loss that would promptly result from the establishment of the insect pests and plant diseases enumerated in this address, in the farms, forests and fields of the Pacific Coast, should be preceded by a thorough acquaintance with the actual financial loss to the crop producers of the countries in which the same have been permitted to gain an entrance and establish a residence. The natural deductions from such a study would, we believe, bring about a clearer, better recognition of the value of efficient quarantine work and a concerted determination to maintain, develop and support the same.

Economy in the use of irrigation water on sandy soils is effected by good soil management and by the strip border method of application. At the Umatilla, Oregon, branch experiment station H. K. Dean, superintendent, reduced the duty of water from 9.7 acre-feet to 4.7 acre-feet last year. This stretches the water for one acre at first to more than enough for two acres later, without loss of yield.



Paint Economy Isn't "Cost Per Gallon"

THERE'S one way only to save on paint. That way is to use the best of paint.

Some think of paint economy as "cost per gallon." That is wrong.

Cheap paint doesn't cover as much surface—you need *more gallons*.

Cheap paint is more difficult to spread, requires more labor, so the best paint costs you no more when you've put it on the house or barn than cheap paint does.

More than that, it lasts five or more years, if properly applied, while cheap paint, on the average, begins cracking in twelve months. Good paint is an *investment* that saves money by preventing deterioration.

"Cheap" paint is the only paint that really *costs*. Don't allow surfaces to rot. It costs less to paint them.

We've made paints for western use for 72 years. We use the best materials—pure PIONEER WHITE LEAD, pure linseed oil, zinc and color, but we mix them in scientifically exact proportions with long-time skill.

Our white-lead base must be fine enough to pass through a silk screen with 40,000 meshes to the square inch. That means covering capacity and ease of spread. We super-purify the lead to make it "whiter," which means clearer-toned colors.



The finished product on the house or barn is an elastic, tough, protective coating.

We call these paints "Fuller's Specification Farm Paints" because they are the very best made for the purpose.

Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint

M'd. by W. P. Fuller & Co.

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and PIONEER WHITE LEAD for 72 Years. San Francisco
Established 1849

Branches in 16 cities in the West—Dealers everywhere

Also makers of All-Purpose Varnishes, Silkenwhite Enamel, Fifteen-for-Floors Varnish, Washable Wall Finish, Auto Enamel, Porch and Step Paint and PIONEER WHITE LEAD.

Free Information Mail Coupon

Send coupon for free book, "Save the Surface," which tells of the vital importance of good paint. Also get our small booklet of Fuller's Specification Farm Paints.

Both books will help you in selecting the right paint for your needs. Mail coupon now.

Ask our Specification Department for free detailed advice on any question about painting.

W. P. Fuller & Co.
Dept. F 17, San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your small booklet of farm paints and varnishes.

Name.....

Address.....

City..... State.....

For all exterior jobs of painting it is advisable to obtain the services of a Master Painter

Applying the Spray for Anthracnose

By M. D. Armstrong, County Fruit Inspector Hood River County

ANTHRACNOSE SERIOUS

The rapid spread of anthracnose in the Northwest during the past year makes it necessary for growers to take every precaution against it this fall before wet weather comes on. Where orchards have not received the August or early fall application they should be sprayed just as soon as the apples are picked and every part of the bark surface on the tree covered. The proportions of Bordeaux to use are 4-4-50 for the early fall spray and 6-6-50 for the delayed fall or winter spray. If lime and sulphur is used the proportions should be 1-8. Growers who will apply Bordeaux for anthracnose will find Mr. Armstrong's recommendations both a time and labor saver.—Editor.

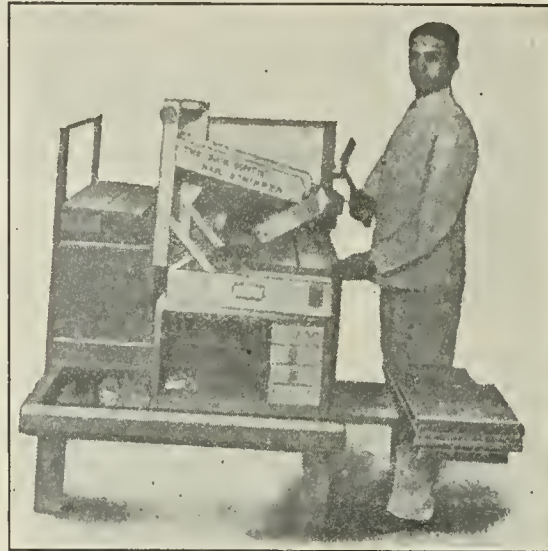
THE preparation and application of the Bordeaux spray is one of the disagreeable sprays that the growers have and to save time and patience, materials and methods for its preparation should be as convenient as possible. For large orchards perhaps the most convenient plan is to have two elevated tanks at such a height that their contents can be run into the spray tanks where the lime can be slacked and the to fill quickly. The arrangement necessitates a platform level with the top of the tanks where the lime can be slacked and the vitriol dissolved in other tanks or barrels and then easily run off into the tanks for the diluted solutions. Where two machines are at work, one man can be employed constantly mixing and making ready the solutions, so that all the sprayers have to do is to drive under the pipes and run an equal amount of the lime and vitriol water into the tanks with the agitators running.

For the small orchard the equipment need not be so extensive and as the most trouble comes in the proper preparation of the lime this operation should have careful attention. Much time can be saved if a large mortar box is provided in which a considerable amount of lime can be slacked at once. The amount will depend on the size of the orchard and will be from one to four or more barrels, according to the amount used in a day. The box will have to be built to suit the amount of lime needed and should be large enough so that the mortar will not be over 8 or 10 inches deep. Plenty of water should be used and care taken that the lime is not burned. If two or more barrels are to be slacked it should not all be slacked at once as a smaller amount can be better stirred. The box should be set level and the number of pounds of lime used should be known. After the lime is thoroughly slacked, which will not be in less than a week, the surplus

water can be drained off and the mortar checked off into squares so that each block will represent the number of pounds of

lime required to make a tank of spray. The best grade of lime should be used, and if slacked several days ahead of time, all particles will be slacked down to a paste and be easily put through the strainer into the tank. In mixing the vitriol and lime water

THE DICK SMITH NAIL STRIPPER



SELF-FEEDING ADJUSTABLE
FOR 2d TO 10d NAILS

This stripper is a revelation in rapidly stripping, or heading nails, and is, without question, the greatest help to the practical box maker. It is intended to be used in handling nails from 2d to 10d.

One of the great advantages of the SMITH is its adjustable feature. By the adjustment of thumb screws the stripper can accommodate nails from 2d to 10d equally well.

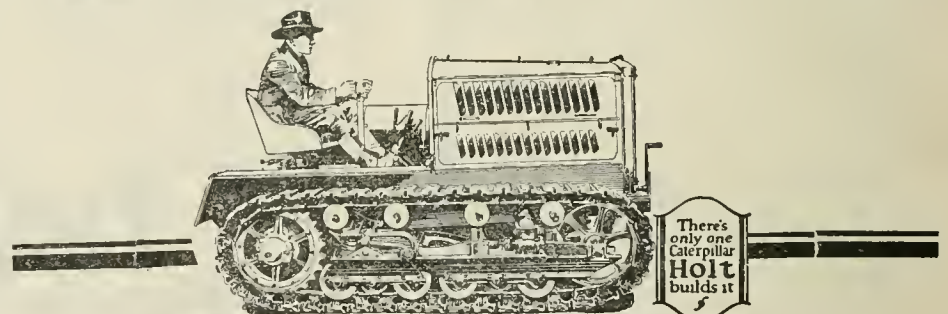
When not in use, it can be closed like a small suit case, measuring 5 by 10 by 19 inches, and weighing but 10 pounds.

Ask your local dealer for a demonstration or write

DICK SMITH

Sole Manufacturer

912 W. 37th Pl. Los Angeles



Dependability
the
dominating feature
of "Caterpillar" Tractors
The HOLT

MANUFACTURING COMPANY

Stockton, California

Peoria, Illinois

Los Angeles, Cal.

Spokane, Wash.

San Francisco, Cal.

the lime should be put into the tank first unless both can be run together. The tank should be then well filled with water before the vitriol water is added. The agitator should run continuously while the tank is being filled and until it is sprayed out. The vitriol water should be stirred before being put into the tank, as the strongest solution is always at the bottom of the barrel.

The Value of Fairs

FAIRS will play a more important part in an industrial way in the Northwest this year than formerly. The value of community, county, state and interstate fairs as an asset to both the business man and producer is gaining wider recognition and those communities which will not hold fairs or an exhibition of some kind this year are planning something of the kind in future. This awakened interest in fairs is of great importance in the industrial life of community, county and state as it indicates active public spirit and enterprise. It stimulates better production of orchard, farm and garden produce, engenders community spirit and advertises the superiority of certain sections to produce certain products, as well as those who produced them.

To dispose of farm products as well as manufactured goods to the best advantage, they must be talked about. The fair provides the best medium for this purpose. The excellence of community products and the special lines in which various individuals excel are brought out and the benefits that are attained are many fold.

In holding a fair it should be advertised extensively. This should be done by a well organized publicity committee which should leave no stone unturned to create interest in the forthcoming event.

A Valuable Book

"The Commercial Apple Industry of North America"

Published by the Macmillan Company is a new book covering all phases of the Apple Growing Industry that *Better Fruit* highly recommends to apple growers or those who contemplate engaging in this occupation. Its authors are J. C. Folger, Assistant Secretary International Apple Shippers' Association and S. M. Thompson, formerly Fruit Crop Specialist, U. S. Department of Agriculture. It is edited by L. H. Bailey, the well known authority on horticulture.

If you are interested in obtaining a copy of this valuable book send us \$3.50 and we will have same forwarded to you. Remit by postoffice money order or check to

Better Fruit Publishing Company

Twelfth and Jefferson Streets
Portland, Oregon

A One-Man-Tractor on a One-Man-Farm



*The Smallest
Big Tractor and
Biggest Small
Tractor made*

THE Oldsmar Tractor is built to meet both the purse and purpose of the progressive farmer on a small farm.

Designed and manufactured by R. E. Olds, famous in the automotive industry, the Oldsmar is the all-season, all purpose tractor.

It will plow, disc, harrow and cultivate; run an electric plant, cream separator, churn or other farm equipment. It's powerful enough for hard work and economical enough for light work. And it stands the "gaff."

Consider the price of the Oldsmar, \$460. Then make your comparisons with all other tractors offered.

Your territory may be open, Mr. Dealer. Every small farm's a prospect. Any farm can support an Oldsmar; any farmer can afford it. Write today for catalog, information and terms.

O. V. Badley Co.

DISTRIBUTORS
425 East Morrison Street
PORTLAND OREGON

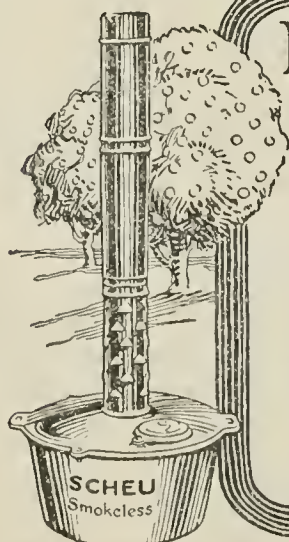


\$460

FREE An Empire Plow free to the first person buying an Oldsmar Tractor in each community. Don't fail to see this tractor on demonstration at the OREGON STATE FAIR, Salem, Oregon, September 26 to October 1.

MULTNOMAH COUNTY FAIR

GRESHAM, OREGON, SEPTEMBER 19-24



Frost Insurance

\$1.15 per hour per acre

"Used 27 Scheu Heaters to acre on the night of April 25, 1921—temperature outside of orchard 23° raised to 30° and 31° inside. I have a full crop in area covered by the heaters," writes W. C. Stone, Prop. Squaw Butte Orchards, Emmett, Idaho.

Scheu Smokeless and Canco Heaters

Give positive protection. Operating cost \$1.15 per acre per hour. Temperature as low as 16° successfully raised above danger point. Used by growers the country over. More than a million Scheu and Canco heaters now in use. Heaters cost 36c up. Order early to get frost protection next spring.

Write for free 48 page book—"Frost Insurance." Resident agents wanted.

Orchard Heater Dept. C
WHITING-MEAD COM'L. CO., LOS ANGELES



BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

W. H. WALTON.....Editor
JERROLD OWEN.....Associate Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

A. H. BILLINGSLEA.....
.....No. 1 Madison Avenue, New York
J. C. BILLINGSLEA.....
.....Advertising Bldg., Chicago
SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

Agricultural Credits

More adequate farm credits, lower freight rates, deflation of labor costs, reduction in prices to the consumer and a more equitable adjustment of the tax burden were recently pointed out by Charles E. Gunnels, treasurer of the American Farm Bureau Federation as the foremost problems that must be solved to secure a proper return to normalcy. We agree with Mr. Gunnels that the problems enumerated are among the most important that must be adjusted to bring economic prosperity and stability. Action, however, that has or will be taken is expected to bring relief along these lines, with the exception of providing a permanent and more expansive form of agricultural credits.

While the relief bill to aid the farmer in the matter of credits recently passed by congress should prove highly beneficial its provisions do not make it part of the permanent banking institutions of the country.

What the agriculturists of the country need is an expansion of the operations of the credit provisions

of the Federal Reserve banking system. It is to the bank that the farmer or the fruit grower turns and will turn when he is in need of credit. Why then should it not be made available to him through the nearest and most convenient source?

Representing more than one-third of the wealth of the nation and estimated as an 80 billion dollar industry, the Federal Reserve reports show that less than 30 million dollars worth of agricultural paper was handled by this big banking system in 1920. Why? Because the provisions of the Reserve Banking system surrounding the extension of credit to agriculture are too stringent and cumbersome.

Congress has enacted special legislation to give the agricultural producer credit relief. Why not, therefore, have the provisions of this measure incorporated as part of the Federal Reserve Banking act. Instead of making the aid of this powerful financial agency so difficult for agriculture to reach why not bring it nearer to the industry that constitutes the strongest pillar in its structure?

Optimism

It takes considerable courage to look a financial slump in the face and smile. A quitter cannot. A winner always does. Not that the situation is not just as serious for him. Possibly the smile is no deeper than the surface. He may really believe the financial wound to be mortal, but if he meets it with the grim determination that smiles and will not admit defeat, even when it appears a reality, he has within him a reserve power which may pull him out of the hole.

The fatalist who looks upon bad luck as foreordained and believes good fortune will come only if the powers so will it, is not a successful man. He lacks the very germ from which success springs.

It is not optimism to don a silly grin, meet every excuse with the vacant comment, "Well, it can't get much worse!" and sit down to wait

for something better or worse to happen.

The true optimist is he who believes in himself, refuses to give up, and when ill fortune visits him, rolls up his shirt-sleeves, takes a hitch in his belt, smiles grimly, and plunges into the task ahead determined to blaze a path out of his difficulties.

An object lesson to the fruit grower who may become discouraged and decide to throw up the sponge is the brief story of an Oregon apple grower, who last fall, lost faith and tried to sell his orchard property including his home and all he possessed for \$19,000. Unable to do so he was forced to hang on and this year sold the apple crop on his place for \$28,000 or \$9,000 more than the valuation he had placed on it last year.

The fruit grower who neglects his trees or sells his orchard because of one unprofitable year, will never be successful in any endeavor. But the fruit man who sees the tremendous possibilities in the industry in the Pacific Northwest and recognizes the readjustment period as a financial stomach-ache which cannot last long and which may leave matters in a more sound condition than before the attack, will be the successful grower of the future.

Our Markets Abroad

While a tariff on fruits will aid the American producer in removing foreign competition and raising prices, the schedule should not be made so high and so sweeping as to cause a restriction in the sale of our products abroad. It should be remembered that the United States produces a surplus of most agricultural products and to market them successfully it must have outlets abroad. To secure the best results the part of wisdom will be to adopt a give and take policy rather than erecting a tariff wall so high that producers in foreign countries will be cut off from an income that they would spend in buying American products. In short, to prosper ourselves, we must, to some extent, allow our competitors to prosper also.

Northwest-Fruit Fair Organized

THE Pacific Northwest Fruit Exposition, a project for the purpose of more widely advertising and distributing the fruits of the Northwest was organized during the past month in Seattle and will be incorporated under the Washington state laws providing for agricultural fairs. The exposition will be held in the Seattle Port Commission's Bell street terminal in November. Exhibits will be solicited from the various fruitgrowing districts of the Northwest and a program prepared which will include lectures to growers by experts in horticulture, packing, transportation and other features of interest.

The officers of the new organization are: J. A. Gellatly, Wenatchee, president; E. H. Pride, Bellingham, vice-president; O. C. Soots of Yakima, executive secretary. The board of governors named includes the following:

S. J. Harrison, Benton; William Greig, Cashmere; John W. Langdon, Walla Walla; M. J. Newhouse, Vancouver, Wash.; C. I. Lewis, Salem, Ore.; W. H. Paulhamus, Sumner; W. C. Mumaw, Aberdeen; F. B. Wright, Everett; George W. Dilling and R. H. Parsons, Seattle; R. T. Reid, Bellview; H. M. Gilbert, Yakima; R. O. Kylen, Zillah; Farwell Morris, Grandview; W. P. Romans, Spokane; Paul H. Weyrauch, Walla Walla; A. W. Stone, Hood River; J. R. Everett, Okanogan; Geo. W. Lee, Omak.

Pond's Centipede Ladder



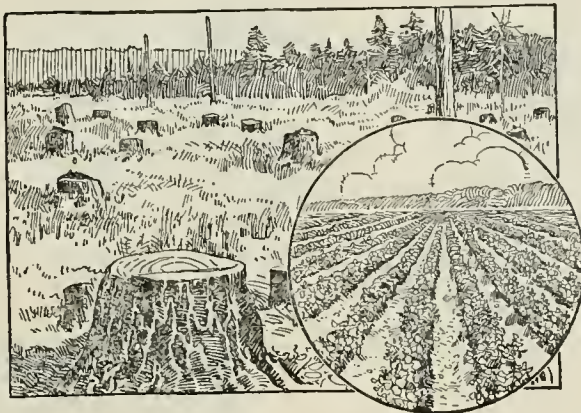
Ask your implement dealer to show you the latest invention in ladders for use in high trees. Made of iron, Oak and clear Douglas fir. Tall, strong, light weight, rigid, stable and reasonably priced, the last word in ladder efficiency. In tall trees it will cut your picking costs in half. Descriptive circular on request.

Ask your dealer for a demonstration.

RUSSELL G. POND
(Forest Engineer)

Inventor and Shipper of
Pond Products

Parkdale, Hood River, Ore.



Make
YOUR
Idle
Acres
Yield
Profitable
Crops

Make These Idle Acres Work for YOU!

EVERY farm has its busy acres yielding profitable crops and its idle acres where stumps, boulders and swamps produce only expensive tax bills. Progressive farmers are adding year by year to their profit-paying acres by reclaiming their idle waste land through the use of



STUMPING POWDERS

Every "stick" is of uniform quality and the best results are assured because these powders are made especially to meet the needs of land-clearing in this section.

Bear in mind an acre cleared or drained adds a permanent income to your farm business.

Send for a free copy of book entitled "Development of Logged-off Lands" telling how to use explosives for land clearing, ditching and tree-planting.

E. I. DU PONT DE NEMOURS & CO., INC.

Portland, Ore., Seattle, Wash., Spokane, Wash.

Orchard for Sale!

23½ Acres in beautiful White Salmon Valley, Washington, 3 miles from town. 13 Acres in Yellow Newtowns and Spitzenbergs, 12 and 14 years old, with proper pollenizers. Fine home orchard of 40 trees—every variety of fruit which will grow in the locality. Fine spring just east of the place, with flow enough to supply several places. Price \$4,000.00—reasonable terms for quick sale.

Address C. I. M. care BETTER FRUIT

Advertising Northwest Apples Planned

A MOVEMENT that has been under way for some time by leaders in apple marketing to advertise Northwest apples regardless of brand has been launched and is expected to take definite shape shortly.

The plan that it is hoped will be worked out is to have enough apple handling agencies and organizations in the Northwest get together and appropriate one cent a box this fall so that a substantial fund can be raised to advertise the superiority of Northwest apples during the heavy buying season this year. It is believed by the committee which has the campaign in charge that with a light apple crop in the East the time was never more opportune to advertise box apples and create new markets in territory heretofore untouched.

Should a sufficient fund be raised to carry out the work it is planned to use a system of advertising that will not only direct the attention of the public to the better quality of box apples, but educate it to the fact that fruit is not a luxury, but a food.

Apples shipped from the Pacific-Northwest have a wider distribution than any other commodity shipped from one section. Reports to the United States Department of Agriculture from public carriers for the last five years show that 2,567 cities were used as primary destinations. Telegraphic reports from railroads during the season of 1919-20 showed that about 1,400 cities received carlot shipments from the Pacific-Northwest.



"WENATCHEE" FRUIT AND VEGETABLE PICKING BAG

(Carpenter's Patent)

Made of heavy canvas, reinforced with leather, stitched with waxed harness thread, to a steel frame. Halter webb carries the load from the shoulders as suspenders. These patented features make it so popular, serviceable, practical and labor-saving.

Send for Sample, \$2.50 Postpaid.
Special Prices to Quantity Buyers

C. A. CARPENTER

3837 35th Ave. S. W. SEATTLE, WASH.

Also write the Manufacturers and Distributors:

SCHAEFFER & ROSSUM CO.

ST. PAUL, MINNESOTA



Buy a pipe — and some P. A. Get the joy that's due you!

We print it right here that if you don't know the "feel" and the friendship of a joy'us jimmy pipe —GO GET ONE! And—get some Prince Albert and bang a howdy-do on the big smoke-gong!

For Prince Albert's quality — flavor—coolness—fragrance — is in a class of its own! You never tasted such tobacco! Why—figure out what it alone means to your tongue and temper when we tell you that Prince Albert can't bite, can't parch! Our exclusive patented process fixes that!

Prince Albert is a revelation in a makin's cigarette! It rolls easily and stays put because it's crimp cut! Oh, go on! Get the papers or a pipe—and some P. A.!

Prince Albert is sold in toppy red bags, tidy red tins, handsome pound and half pound tin humidars and in the pound crystal glass hamidor with sponge moistener top.



Copyright 1921 by
R. J. Reynolds
Tobacco Co.
Winston-Salem, N. C.

PRINCE ALBERT

the national joy smoke

For **LILLY'S**
Fall
Fertilizing

NITRATE OF SODA
15 per cent Ammonia
SULFATE of AMMONIA
25 per cent Ammonia

New Supplies

New Prices

We recommend Sulfate of Ammonia as furnishing a better and cheaper form of Ammonia.

Write for prices on car lots or less to

LILLY'S SEATTLE

Making Box Apples Safe

(Continued from page 7)

heavy apple boxes properly nailed. Good boxes and undamaged fruit will always bring better prices, which justifies the slight care and expense in starting shipments right.

Hood River district of Oregon this year will have about 2,000,000 boxes of apples. Walla Walla shippers and the Yakima district of Washington will use about 12,000,000 boxes and the Wenatchee Valley around 12,000,000. The Inland Empire shippers will handle about 5,000,000, which is less than normal for that section. The Underwood-White Salmon district and the rest of Washington are figured as requiring about 1,000,000 boxes this year.

**BEST SERVICE -
QUALITY & PRICES**

**PERFECTION IN
FRUIT
LABELS**

THE SIMPSON & DOELLER CO.

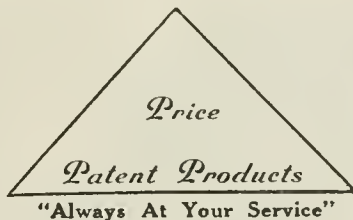
1423-24 NORTHWESTERN BANK BLDG.

PORTLAND, OREGON.

E. SHELLEY MORGAN

NORTHWESTERN MANAGER

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



Growers' and Packers' Equipment

We Manufacture:

	LADDERS
	BOX PRESSES
	PACKING CHAIRS
	BOX-MAKING BENCHES and
	AUTOMATIC ELEVATORS all
	GRAVITY & POWER CONVEYOR kinds
	POTATO GRADERS AND SIZERS of
	PRICE FRUIT SORTERS AND SIZERS Special
	NELSON FRUIT SORTERS AND SIZERS Equipment

PRICE "PRICE PRODUCTS"

Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse.

Illustrated Booklets and Price List on Request

Fruit Appliance Company

Successors to

Price Manufacturing Company, Inc.

YAKIMA, WASHINGTON

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS, JACOBS & CO., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Picking for Flavor

(Continued from page 9)

hand, if the season is unusually short and the fruit does not have time to develop fully, the acid content, which naturally decreases through all the stages of development, will be high.

While the time of picking fruit for flavor may not always agree with the time for maximum keeping quality, yet in most cases the two should be considered together. The greater percentage of apples are held in storage, or at least under storage conditions, for periods of varying lengths. Some may only be held a few weeks, while others are kept from one year to the next. In either case the keeping quality will be reflected in the flavor of the fruit. Storage troubles may be divided into those which affect the external appearance of the fruit, generally spoken of as skin blemishes and those that injure the flesh, known as decay.

The most important skin blemishes are the ordinary and soft scalds and the Jonathan spot. The decays include the physiological or natural decay, and the various fungus or bacterial decays. Scald is the most prevalent and is recognized by the familiar characteristic browning of the skin. While in the case of ordinary scald this does not extend into the flesh, it greatly lessens the commercial value, and in cases where the scald is serious it may weaken the skin to such an extent that complete physiological decay may result. While affecting Jonathans principally, Jonathan spot is one of the most important skin blemishes. It first appears as small round, brown or black spots about one-sixteenth of an inch in diameter, or in some cases simply as indistinct, very dark red to black splotches. In later stages these spots may enlarge somewhat and become slightly sunken.

(To be concluded in October number)

Decrease in Number of Fruit Trees

A RECENT bulletin of the United States Census Bureau shows that the Pacific Coast is the only section of the country that has had an increase in the number of bearing apple trees during the ten years between 1910 and 1920. During this period the number of bearing trees in the coast states has nearly doubled in num-

ber. The bulletin also shows that there are not one-third as many young apple trees that are not in full bearing as there were ten years ago. These figures indicate that although the Pacific Coast states lead the country in the increase in the number of

A Banking Service for the Horticulturist

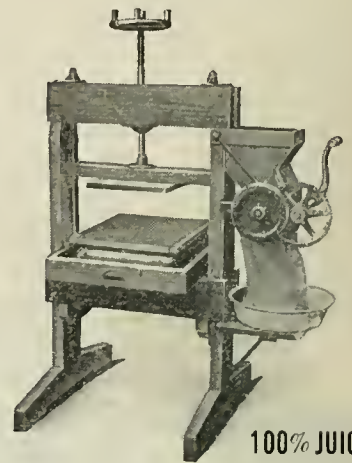
A complete banking service is offered you through our various departments.

Our officers welcome the opportunity of advising you how best to use these departments. Or a little booklet outlining the functions of each department may be had from the tellers upon request.

The
First National Bank
OF PORTLAND, OREGON

The first national bank west of the Rocky Mountains

Orchard Queen Cider Mill



100% JUICE

It doesn't crush the apples, but grates or grinds them, breaking the juice cells so that when the pomace is pressed in the sanitary cloth sacks, all of the juice is extracted.

Orchard Queen is the simplest, easiest operated, cleanliest and most efficient of cider mills. No metal in cylinder or hopper to discolor juice. Operated by hand or power. Made in two sizes. Our folder explains in detail the construction and operation of the Orchard Queen Mill. Write for it.

Puffer-Hubbard Manufacturing Co.

3203 East 26th St. Minneapolis, Minn.

MYERS SELF-OILING POWER PUMPS

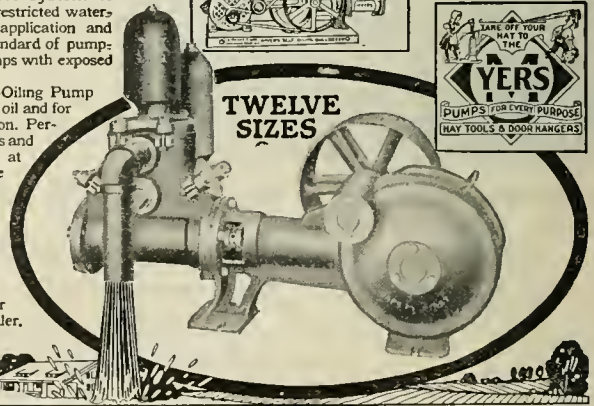
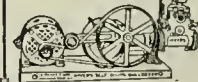
For General Service in the Home or on the Farm

Modernize your home and farm—have plenty of running

water wherever and whenever needed—install a MYERS SELF-OILING BULLDOZER POWER PUMP—the only pump manufactured today with covered working parts, a perfect system of self-lubrication, extra large valves, unrestricted waterways, improved method of power application and other refinements which provide a standard of pumping service unequalled by old style pumps with exposed gears and antiquated oiling systems.

Fill the reservoir of a Myers Self-Oiling Pump occasionally with any good lubricating oil and for weeks it will require no further attention. Perfect lubrication, enclosed working parts and other improvements permit operation at high speed or against heavy pressure greatly increase the capacity, minimize wear and breakage, prevent accidents, and insure economical, long time service.

Sizes and styles for shallow or deep wells. Capacities from 500 to 9000 gallons per hour. Operation by motor, gasoline engine or other power. Write for literature, or ask your dealer.



THE F.E. MYERS & BRO. CO. NO. 10 ORANGE ST. ASHLAND OHIO. ASHLAND PUMP AND HAY TOOL WORKS

MAKE YOUR SOIL YIELD MORE. USE TORO BRAND



This has increased crops up to 500 per cent. It prevents wire worms, smutty grain and potato scab. For Lime-Sulphur Solution use DIAMOND "S" BRAND REFINED FLOUR SULPHUR. For dry dusting use ANCHOR BRAND VELVET FLOWERS OF SULPHUR. Against rodents use CARBON BISULPHIDE. Write for circulars 6, 7 and 8, price list and samples.

SAN FRANCISCO SULPHUR CO.
624 California Street
SAN FRANCISCO, CAL.

Pacific Northwest Distributors



Spokane, Wash.
Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

apple trees coming into bearing that the maximum planting of trees reached its peak ten years ago and has declined each year since.

According to the census figures the decrease in the number of bearing apple trees in the United States during the past decade has been 36,057,811 or 28.8 per cent, and the decrease in the number of young trees not yet of bearing age has been 45 per cent. The number of bearing peach trees during this same period decreased 28,881,736, or 30.5 per cent.

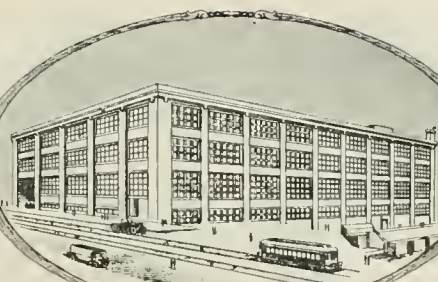
Packing House Needs

(Continued from page 9)

lem. Those who contemplate the construction of new houses or desire to improve their equipment and methods of operation may secure copies of the bulletin and additional information upon application to the United States Department of Agriculture, Washington, D. C.

A CORRECTION

THROUGH a typographical error the price of a pair of the box handles which are being put out by the Box Handle Company of Seattle, Wash., was made to read \$3.50 in one place in their adv., in the August issue and \$5.00 in another. The correct price in both instances should have read \$3.50.



F. C. Stettler Mfg Co.

Portland - Oregon

Lithographers

Color Printers

Labels

Cartons

Folding Boxes

Cut Outs

Display Cards

Special Advertising

Stiff Boxes Plain and Fancy



THE OLD WAY; THE NEW

The Box Handle Company

of 800 First Avenue, South, Seattle, Washington has become a benefactor to the orchard man, the packer, the expressman, the produce man, and all others who handle boxes.

The man who works in the orchard can only pick up one box at a time and it is some strain to pick the box up from the ground. With a pair of handles he picks up two boxes and carries them with ease. He is not half so tired when night comes, and does as much work as two men, which cuts your labor down.

The apple season is short at the best. You don't lose any apples out of the box by using the handles. You get a better percentage of packing because the apples are not bruised by using box handles.

This handle will lift any size box from 15 to 22 inches long. Every rancher who owns a ranch from 10 to 50 acres should have from 1 to 12 pairs of handles.

Your stomach won't be sore or your back lame when night comes if you will use the box handles.

The prices are \$2.00 for one handle or \$3.50 for a pair.

After you have used a pair for one day, you wouldn't take \$20.00 for them if you couldn't get another pair. Don't let this opportunity get away. Buy now. Send us \$3.50 and let us send you one pair by Parcel Post. We feel satisfied that you will buy more if you need them.

The Box Handle Company

800 First Avenue, South
SEATTLE, WASH.

Northwest Notes From Here and There

DOUGLAS county will be the banner section in Willamette valley this year in the production of dried prunes, according to official estimates. The output in Douglas county is placed at 7,500,000 pounds. The Polk county output is given at 2,000,000 pounds; Marion county, 1,500,000 pounds; Yamhill county, 2,500,000 pounds; Lane county, 1,500,000 pounds. Umatilla county, with an estimated output of 2,000,000 pounds, for the first time becomes a larger factor in the dried prune market this year than several of the Western Oregon prune-producing counties. The total production of dried prunes in Oregon this year is estimated by F. L. Kent, statistician of the U. S. Bureau of Markets, to be 21,610,000 pounds or less than one-half of the tonnage forecasted early in the season.

OUTSIDE of Hood River county the largest apple crop that will be produced this year will come from Jackson county which will ship 900 cars. Jackson county will lead the state in pear production with an estimated shipment of 4,500 tons for the season.

ESTIMATES made by the fruit growers of the Calapooia River valley are to the effect that before the season closes 450,000 pounds of berries will have been produced in that section. These figures do not include the large quantity of berries appropriated for family use. Two hundred and twenty-five tons of the berries were shipped to the cannery at Eugene.

WITH the increase in apple production in the Hood River valley the Apple Growers' Association has found it necessary to add to its warehouse capacity and is building storage houses at Odell and Dec. The new structure at Odell will be one story high, 130x60 feet. It will be built of tile and will cost \$11,000. The Dec plant, which will be constructed of wood, will be 120x50 feet and cost \$8,000.

AT \$40 a ton prune growers in the Ontario district of Eastern Oregon have made several contracts and state that they are satisfied with this price. Limited apple sales that have taken place in this district show prices of \$40 to \$75 a ton with Delicious showing the highest quotation.

ONE of the largest peach crops produced in Oregon this year was raised in the orchard of Alex LaFollette, in Marion county. The output from the LaFollette orchards was 12,000 boxes, which sold for an average of \$1 per box. Two years ago the crop of peaches from the LaFollette orchards totalled 18,000 boxes. It is one of the few large peach orchards in the state that was not injured to any extent by the 1919 freeze.

TOTAL production figures for the loganberry season which recently closed in the Willamette valley are 53,000 tons or 10,600,000 pounds. The output in 1920 was 7,800,000 pounds, the increase this year being due to a much larger acreage coming into bearing and heavier yields. The value of this year's loganberry crop in the Willamette valley is placed at \$325,000. In commenting on the increase in the loganberry

tonnage in the Willamette valley and average prices extending over a period of six years Fred G. Schmidt of the Northwest Fruit Products Company of Salem, says that the average price received by growers since 1915 is about 5½ cents a pound. Mr. Schmidt points out that in 1915 the average price was 1¾ cents a pound; in 1916, 3 cents a pound; in 1917, 3½ cents a pound and in 1918, 5 cents a pound. In 1919 the price took a pronounced jump to 9 cents a pound, and in 1920 reached its highest mark at 13 cents. This year the average price ran about 3¼ cents a pound.

O A C

Oregon's Higher Institution of

TECHNOLOGY

Eight Schools; Seventy Departments

FALL TERM OPENS SEPT. 19, 1921

For information write to the Registrar

Oregon Agricultural College

CORVALLIS

Oregon or Italian
Prunes

From the Red Hill
Orchard for Sale

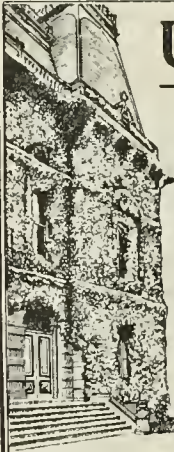
Non-Irrigated

40-50s @ 10¾c per lb., 50-60s @ 9c.,
60-70s @ 8c, 80-90s @ 6c

Processed in 25 lb. boxes or in 100 lb.
sacks. f. o. b. Salem.

Edward Dencer

Grower and Packer
Route 3, Box 158 Phone 88F2
SALEM, OREGON



University of Oregon

CONTAINS:

The College of Literature, Science and the Arts. The School of Architecture and Allied Arts. The School of Business Administration. The School of Education. The Extension Division.	The Graduate School. The School of Journalism. The School of Law. The School of Medicine. The School of Music. The School of Physical Education. The School of Sociology.
---	--

Fall Term Opens September 26

A high standard of cultural and professional scholarship has become one of the outstanding marks of the State University. For a catalogue, folders on the various schools, or for any information, write THE REGISTRAR, UNIVERSITY OF OREGON, Eugene, Ore.

Musical Merchandise Write Us	<p style="font-size: 0.8em; margin: 0;">WE SAVE YOU MONEY!</p> <h2 style="font-size: 1.5em; margin: 0;">W. Martius Music House, Inc.</h2> <p style="font-size: 0.8em; margin: 0;">1009 First Avenue, Seattle, Washington Everything Known in Music</p>	SHEET MUSIC Write Us
-------------------------------------	--	-----------------------------

AN apple crop worth \$600,000 in Union county is the present estimate following a careful inspection in the various apple belts of the county made by men familiar with crop conditions in that section. The crop, which is reported to be of fine quality will total 500 cars.

WASHINGTON

EARL S. COE and Fred Baker, White Salmon orchardists, have entered the apple marketing business and have begun the construction of a warehouse. An estimate of the apple production in the districts in which they will operate this year gives the following output: Goldendale, 50 cars; Lyle, 100 cars; White Salmon, 400 cars, and Underwood, 275 cars.

THE North Pacific Co-operative Berry Growers, an organization representing the communities in Kitsap county, Bainbridge Islands, Ollala, Jefferson county, Grays Harbor, Sunnyside, Snohomish and Pacific counties has been formed for the purpose of marketing the berry output from a large acreage in Western Washington. The purpose of the organization is said not to be obtaining a higher price from the consumer, but to facilitate distribution.

TO provide facilities for handling more than 150,000 boxes of apples through the Dryden unit of the Wenatchee District Co-operative Association a modern frost proof brick warehouse, two stories high, will be built immediately upon a site along the Great Northern railway track at a cost of \$25,000. The destruction of the Bohlke Fruit Company's warehouse by fire last February left Dryden without adequate storage and loading facilities. The new warehouse will be designed for the rapid handling of fruit, both in receiving and shipping.

APPLE growers of the Spokane Fruit Growers' Company are amply protected in the matter of boxes for their tonnage this season, according to Charles J. Webb, assistant manager of the company. Because of the abnormally heavy crop in the Northwest this year, the box situation is causing some of the organizations and many of the growers considerable anxiety. With an estimated Northwestern crop of 40,000 cars of apples, 750 boxes to the car, the 1921 apples will require 30,000,000 boxes. Where the box supply was not contracted for early in the season difficulty may be experienced later in securing enough.

PACKERS of pears and apples in the Yakima district will receive five cents a box for the season of 1921, instead of six cents, the prevailing wage last year, according to a statement issued by the Yakima Fruit Growers' Association.

THROUGH the agency of the Washington Berry Growers' Association, growers of Sumner and the Puyallup valley have marketed this season 145 cars of fresh berries, more than 75 per cent of which have been placed on the market as far east as Minneapolis, according to F. H. Krug, sales manager for the association.

*Apples, Pears, Peaches
Potatoes, Onions*

and all kinds of Fruit and Produce Bought for Cash..

Address us as to what you have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.

QUALITY



Half Century of Service

"Clothes make the man
Labels make the can"

Let us dress
your "Silent
Salesman"
to sell your
product.

SCHMIDT LITHOGRAPH CO.

SEATTLE · LOS ANGELES · FRESNO
PORTLAND · SACRAMENTO · HONOLULU
· MANILA ·
SAN FRANCISCO

SERVICE

The Value of An Apple

depends greatly on its appearance. When Nature has done her part, giving size, color and shape to your fruit, do not lessen your profit by use of imperfect picking devices, which may bruise or mar the fruit's appearance, when you can buy

A Portland Picking Bag

Designed to afford safety to your fruit from tree to box.

Price \$2.00 Each

THE HARDIE MFG. CO.

55 North Front St., Portland, Ore. 222 Los Angeles St., Los Angeles, Cal.



Portland Picking Bag

proximately 45 cars of fresh berries have been sold in Chicago, where for the first time in the history of the valley herry business Chicago has been cultivated as a market rather than a dumping ground for excess shipments, according to Mr. Krug.

IDAHO

A LARGE portion of the apple crop at Fruitland is reported to be already in the hands of buyers at profitable figures to the grower. As an instance of the prices being paid for apples at Fruitland this year one sale is reported of \$28,000 for the fruit from an orchard property that last year was offered for sale at \$19,000, including land, improvements and water rights. The apple crop at Fruitland is estimated this year at 1,200 cars and is expected to bring to growers nearly \$2,000,000.

▲ ▲ ▲

E. F. STEPHENS, owner of extensive orchards near Nampa, reports that he has contracted a large part of his apple crop to be shipped in bulk at \$60 a ton and will receive \$1.65 for the portion of it that will be shipped in baskets. The crop from the Stephens orchards this year will total 35,000 to 40,000 bushels.

▲ ▲ ▲

AT Twin Falls the apple crop is estimated to be 50 per cent better than it was in 1920. The shipment this year is expected to be 500 cars and the orchards having been well cared for, the quality of the fruit is reported to be of the finest.

▲ ▲ ▲

MONTANA

WITH the completion of its new warehouse at Hamilton, the Equity Association is in shape to handle 100,000 boxes of apples this year, according to Manager O. M. Gerer. Last year the association handled 85,000 boxes. The new warehouse will be equipped with two Cutler graders and a system of gravity conveyers that will take the apples from the growers' wagons and finally deliver them in the railway cars. Apple growers at Hamilton, which is largely the center of the apple industry of the Bitter Root valley, are reported to be in close touch with the buyers and indications point to a higher range of prices than were received last year.

Oregon State Fair

SALEM

September 26 to October 1

A Wealth of Agricultural Displays
Magnificent Livestock Exhibition
Complete Machinery and Tractor Exhibit
Splendid Night Horse Show
Superb Speed Program
High Class Amusements
Special Attractions Both Day and Night
Free Camp Grounds
Excursion Rates on All Railroads

For Further Particulars Write
A. H. LEA, Manager, Salem, Oregon



Northwest Orchard Ladders

"The Quality Line"

For Sale by

Leading Dealers Everywhere

See our big display of ladders, pruning equipment and other orchard supplies at

OREGON STATE FAIR
Salem, Oregon

Northwest Fence and
Wire Works

PORTLAND, OREGON

At Service Stations and Garages

At service stations and garages everywhere you can get "Red Crown," the all-refinery gasoline with a continuous chain of boiling points — insuring ready starting, rapid acceleration and maximum power. Look for the Red Crown sign before you fill.

STANDARD OIL COMPANY
(California)



The
Gasoline
of Quality



SYKES' SERVICE BULLETIN

Vol. I

Portland, Oregon, September, 1921

No. 1

What Sells Apples?

In the August Blue Goose News, the New York manager of the American Fruit Growers, Inc., makes special mention of the fact that **CONDITION** of the fruit upon arrival, **APPEARANCE** of the fruit, and particularly of the package, play an important part in determining the selling price. It is the **EYE** which brings the first favorable or unfavorable impression.

Rich red-faced Northwestern apples smile right into your face when you open a box packed under the "Sykes System." All of the goodness of the fruit is apparent to the **EYE**—of course if **YOUR** fruit is inferior it might be well for you to continue to cover it as in the past with a white news wrap, although you are not improving its condition.

The **RECORDS** show that apples packed with Sykes Safety Separator Wraps not only come out of storage in **BETTER CONDITION** than fruit wrapped in the ordinary way, but **SELL BETTER**, for they have the requisite **APPEARANCE**. The salesman can **DRESS** up a box of Syked fruit quicker and better than where any other wrap is used. **THAT** means better average prices. If you **DOUBT** this in any way make us **PROVE** it—we can.

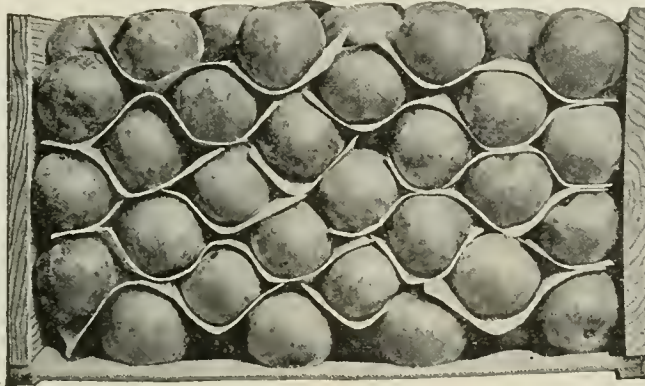
BIG VICTORY IN FIGS

George Sykes, the inventor of the Sykes System of fruit packing, was called to Fresno, Calif., early this season by the fig growers' organization and requested to invent a special wrap, by the use of which **FRESH FIGS** might be marketed in the Eastern markets. The Sykes Fig Wrap resulted after many tests. Of course, every one was skeptical—fresh figs had never carried successfully under any system evolved by the experts.

The Associated Press, under date of June 28, told the wonderful story of the arrival of the **FIRST CAR** of **FRESH FIGS** ever seen in Chicago. On the auction block the 1188 packages (6 lbs.), averaged \$1.81; the remainder of the car a few days later in New York sold for \$2.70 package average. General Manager Niswander said: "The price (Chicago sale) is remarkably satisfactory—it is really higher than we had anticipated." The Associated Press report said: "Owing to the perishable nature of the fruit its sale this far East has **NEVER BEFORE** been attempted. The figs stood the trip well and were reported as having retained their flavor."

Other shipments are now being made from the late crop with most satisfying results.

Do you wonder why the name Sykes is now widely known in the Fresno district? Just stop and **REASON** this little point out—**WHY** do you **SMOTHER** an apple with a close, tight wrap? Are figs any **LESS** perishable than



apples? Sykes System does **NOT** smother fresh figs. You have **SEEN** that the Sykes Wraps **CARRY** fresh figs safely. Just figure how much **MORE** valuable is a car of fresh figs than a car of apples.

"SYKEING" CALIFORNIA ORANGES

Here is a nut to crack which will interest **YOU**. It may cause you to **FIND** more real profits in your apples this season.

Last May the Sykes Orange Safety Separator Wrap was introduced into California. Each packing house foreman was asked to put the wrap under the most severe tests. An experienced orange packer demonstrated the pack and continuously visited each house until **EVERY** packer knew the system. One house after another tried the new separator wrap in a small way, then on a larger scale, and finally a number **ADOPTED** it for **THIS** season's pack.

It takes 83 wraps to pack a box of oranges. During June Southern California orange houses **USED** 460,000 wraps; in July, 650,000, and in August the total reached 1,340,000. The **INCREASE** came largely from **REPEAT** orders. The season's total shows **NOW** something over 3,000,000 wraps used **THIS** season. What's the answer? The **RIGHT** way to pack oranges is **NOT** to smother them. The **RIGHT** way to pack apples is **NOT** to **SMOTHER** them. If **NATURE** had intended that fruit should be **SMOTHERED** she would have provided a second coat or hide. Fruit **REQUIRES** oxygen, for fruit surely breathes. Make your own tests—put an apple in a dark desk drawer and lay another on top of the desk; examine both at the end of a week or so—that **OUGHT** to **POINT THE WAY**.

DEMANDING SYKES PEAR WRAPS

Last season several Canadian canneries bought California pears in lugs, also in pear boxes. As an experiment the shipper packed with Sykes Safety Pear Separator Wrap. One car was shipped unwrapped and another wrapped the usual fashion.

The canneries **DEMANDED** a rebate upon both and **THIS** season **REQUIRED** that all fruit shipped them be Syked. Certainly there must be a **REASON**—the fruit carried perfectly.

Have **YOU** a car or so of cannery pears yet to move? Why not **TEST** it out for yourself—if you **DO** you will use Sykes **ALWAYS** in the future.

SPECIAL WRAP FOR EACH FRUIT

An orange has one kind of hide or skin, an apple another and a pear still another. You can go on down the list of prunes, plums, figs and so on. Each has its own type of skin. Is it **LOGICAL** that the **SAME** wrap which has been used for time immemorial should be **ADAPTED** to **ALL** kinds of fruit?

The meat in the cocoanut in the Sykes System is that **EACH** variety of fruit has had its own **SPECIAL** type of wrap designed for it and it alone. This has been done by an expert fruit packer, who has experimented for years along scientific lines—**YOU** get the benefit of his many years' work—and at no cost to you.

MAY WE SEND YOU PROOFS?

We have on file a number of recent letters which so fully **PROVE** all the claims made for the Sykes System that any argument is out of the question. We will deem it a privilege to mail you copies of these letters along with samples of any type of wrap you may be interested in. Don't take our word for it, but **SEE** what the other fellow has found out for himself. We are **NOT** making any point of the **SAVING** in **COST** of **PACKING**—you will quickly discover **WHERE** the Sykes wrap means a **PROFIT** to **YOU**.

SYKED ORANGES—2000 CARS

During the **FIRST** season and in the face of the most critical conditions the Sykes Safety Separator Wrap has been used on over 2000 cars—up to August 15.

That **OUGHT** to mean something to **YOU**. If you are at all informed about the California orange deal you will know that California has the reputation for getting the **BEST** in everything from wrap to box. You also know that California fruit is the **STANDARD** in the Eastern markets when it comes to appearance or dress. No State has such wonderful fruit packing plants with every device known to handle large volume and yet preserve the best appearance. California demands the **BEST**—and California, you must admit, **GETS** the **RESULTS**.

Just figure it out for yourself—what the Sykes wrap has done for the California fresh fig and then what it has done for the California orange—and all of it **THIS** season. Is it not possible for **YOU** to get equally as good **RESULTS** with your apples?

EXCLUSIVE DISTRIBUTORS SYKES WRAPS

BLAKE-McFALL CO., Portland, Oregon
AMERICAN PAPER CO., Seattle, Wash.

SPOKANE PAPER & STATIONERY CO., Spokane, Wash.
PACIFIC FOLDING BOX FACTORY, San Francisco

Our Inquiry Department

FILBERT TREES

KINDLY reply to query relative to filbert trees: Is there any particular season when they should be set out? Would slips from two year old trees answer? Kindly give instructions as to care of young plants, soil, etc.—F. J., Washington.

(1) The best time to plant filbert trees is in the fall or early winter. (2) Slips or shoots from two year old trees will do if they have sufficiently developed roots. Before planting the land should be thoroughly plowed and harrowed and put in good condition. In setting, the best practice is to place the trees about 20 feet apart. The holes should be dug sufficiently large to give the roots plenty of room and filled in at the bottom with some good top soil and some stable manure added. Unless the soil is rich it should receive for several years a dressing of barnyard manure or other fertilizer. In caring for the young trees, clean cultivation should be practiced during the growing season, with a cover crop planted in the fall and plowed under in the spring. To have the young trees develop properly, all suckers and shoots should be removed from them as quickly as they develop. The soil for a filbert orchard should be of good quality, well drained and yet have the ability to hold moisture throughout the summer. Where the soil is deficient in lime this material should be supplied.

▲ ▲ ▲

WOOLLY APPLE APHIS

I have been informed by several orchardists who have examined trees in my orchard that are in a bad condition that they are attacked by woolly aphis. What can I do to control this pest.—M. H. G., Washington.

So far no hard and fast remedy has been developed for the control of this insect. The Oregon Agricultural College Experiment Station gives the following as the best treatment: For infested bark and branches spray with kerosene emulsion 11 gallons stock solution to 100 gallons; miscible oil, 3 to 100; or nicotine sulphate, 1 pint to 100 gallons with 5 pounds of soap for a spreader. A driving spray should be used to penetrate the woolly coating of the insect. It also says that root forms on young trees have been controlled by burying tobacco scraps or dust in trenches over the roots and that miscible oil 5 to 100 or kerosene emulsion 14 gallons stock solution to 100 gallons poured in the hollow about the base of the tree has given some degree of control.

Box Shooks

East Side Box Co.

Manufacturers
SPRUCE AND
HEMLOCK

Box Shooks

Foot of Spokane Avenue
Portland, Oregon

Fair Dates

FAIRS that will be held in the Northwest this year at which fruit will form an important part of the exhibits will be held on the following dates:

Oregon State Fair, Salem, September 26 to October 1.

Washington State Fair, Yakima, September 19 to 24.

Idaho State Fair, Boise, September 26 to October 1.

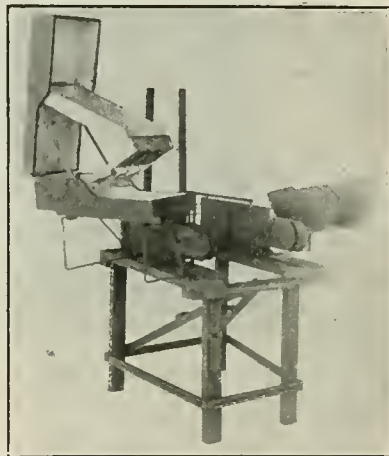
TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
Salesmen everywhere. More wanted.

Make
Boxes
Right,
Fast and
Cheap



Save you
money, time
and trouble.

Success
Box
Making
Benches

Fold up for
easy transporta-
tion.

Last a lifetime.

ADJUSTABLE TO ALL STYLES AND SIZES OF BOXES

Handle poor shoo more rapidly than other benches handle good material. Make more and better boxes. Buy from the Manufacturer and save money: \$30.00 each without racks; \$35.00 each with racks to hold stripper and cleats. Prices f. o. b. Spokane, Washington.

Use the "No Wobble" Ewing Orchard Ladder that lasts for years, and the sturdy, rapid, Success Lid Press that is a pleasure to use.

SUCCESS SEED GRADER CO., INC.

SPOKANE, WASHINGTON

Manufacturers Orchard and Farm Supplies

MAIL YOUR ORDER TODAY.

NEW CROP

SEEDS

Vetches, Alfalfa, Clovers, Grains
Grasses

Selected Re-cleaned Farm and Field Seed at Lowest Market Prices.
Special Mixtures for Wet Land—Dry Land—Burns—
Permanent Hay Crops and Pastures

Cover Crops for Orchards—Dry Land Pasture Mixtures

OUR SEED LABORATORY is in charge of a skilled analyst and all "DIAMOND QUALITY" Seeds are TESTED for PURITY and GERMINATION

WRITE TODAY FOR SAMPLES

NOTE THEIR
PURITY AND WEIGHT

Or send in your order direct. We guarantee full value for the money sent and will give your inquiries our prompt and careful attention. Ask for Catalog No. 200



Western Agents "CLIPPER" FANNING MILLS

Cannery Notes

OWING to the fact that the trade would not buy canned goods at the prices asked early in the season many canneries remained idle or put up limited packs. The result is that the output of canned fruits is much smaller than was expected. With the larger part of the surplus of canned goods carried over from last year being rapidly cleaned up the demand for new stock is strong and canners are looking forward to a prosperous season next year.

▲ ▲ ▲

A RECENT innovation at the plant of the King's Products Company at Salem, was the installation of an attrition mill for use in the manufacture of pumpkin flour. The new machine, which will greatly facilitate the manufacture of this material, was made necessary, due to the increased demand which the company has received for its pumpkin pie filler.

Don't Experiment

It costs money. For \$20.00 you can get my blue prints.

The DENCER DRIER will shorten time of drying and save money on fuel.


It turns out a superior product. It costs less to dry per ton, and less to build than any other drier of same capacity.

I use only one stove for six tunnels. Each tunnel holds 136 half bushel trays.

My driers have been a pronounced success for five years.

Edward Dencer

Route 3, Box 158 Phone 88F2
SALEM, OREGON

At the Sign  of the Fir

12



Drawings, too

THE right picture does the work of a thousand words — and speaks a language that EVERYBODY understands.

The Arcady Art Department can illustrate your booklet, folder or catalog as well as our other departments can print, bind, address and mail it.

TELEPHONE
Main 8829

The Arcady Company

Complete Advertising Service

WRITING
PRINTING
MAILING
ARCADY BLDG



MULTIGRAPHING
MAILING-LISTS
122 1/2 JEFFERSON

J. & H. GOODWIN Limited

Apple Exporters

Headquarters in United States

60 State Street

Boston, Massachusetts

The Largest Handlers of American Apples in English Markets

By using our service you can send your apples direct from the United States into the industrial centers of England. The same organization (J. & H. Goodwin, Ltd., throughout) which ships your fruit from the U. S. A., sells and distributes in London, Liverpool, Manchester, Glasgow and Hull, and on the European Continent.

This means quick handling, considerable economies and the fruit being sold in the freshest possible condition, which means greater returns.

For dependable export information write us at 60 State Street, Boston, Mass., or 127 Duane Street, New York City.

Water Instead of Ice!



This process of cooling by evaporation is recommended by the United States Department of Agriculture, and is being used successfully in thousands of homes. The Empire Iceless Refrigerator will save your food from spoiling through the hot summer months, and there is absolutely no expense attached to its use. Made also in windlass type for use in wells, etc. It is a proven success, and is guaranteed to do the work. Let us send you descriptive folder and prices.

Farm Supply Company

281 12th St.

Portland, Ore.

With the Poultry

TUBERCULOSIS IN POULTRY

TUBERCULOSIS in a poultry flock may be introduced in several ways such as receiving infected fowls, exposure to neighboring infected flocks using same range, infection of premises by free-flying birds, carriers, such as man or animals, whose shoes or feet may carry infected droppings from nearby infected farms. Most eggs harboring the organism fail to hatch, thereby reducing to a minimum the danger of infection from this source, but if infected eggs are thrown to the chickens, the disease may be established in the flock.

Although birds may become infected at any age, the disease is not readily detected by ordinary observation in those under 1 year old, because months are required for the bacilli to multiply in the system sufficiently to interfere with the normal functioning of the body. The older fowls, from 2 to 3 years old, are most likely to display symptoms and show a high death rate.

One of the first symptoms is gradual emaciation, which becomes especially noticeable in the breast muscles. These diminish in size until in advanced stages there is scarcely any flesh left on the breast bone. Feeling the breast region will readily detect this wasting. The appetite continues good. Lameness in one or both legs, or drooping of one or both wings is another symptom.

A skilled operator can apply the intradermic tuberculin test to detect the presence of the disease, but medical treatment for fowls is futile. The wisest preventive measure consists in slaughtering the infected fowls. Fowls in good flesh may be used for food if they show no lesions or only slight ones. Those fowls that are badly diseased and all visceral organs should be burned. The premises should be disinfected thoroughly, including all drinking, eating and other utensils.

THE BACKYARD FLOCK

THE backyard flock should have in addition to the table scraps a light feed of grain every morning.

Four or five handfuls of grain—about one-half pint—scattered in the litter will be sufficient for a flock of 20 to 25 hens. By handful is meant as much as can be grasped in the hand. By scattering it in the litter the hens will be compelled to scratch in order to find the grain and in this way to take exercise, which is decidedly beneficial to them.

In case not enough good, sound, substantial table scraps are available to furnish full feeds, both at noon and at night, another feed of the grain mixture should be thrown into the litter at the night feeding and should consist of as much as the hens will eat up clean. In summer or during suitable weather the grain can be fed by scatter-

ing it on the ground outside the house. A good grain mixture for this purpose is composed of equal parts by weight of wheat, cracked corn, and oats. Another suitable grain mixture is composed of two parts by weight of cracked corn and one part of oats.

▲ ▲ ▲

TEACHING CHICKS TO ROOST

WHERE a large number of chicks are being raised in one brooder house difficulty is often experienced in preventing the birds from piling up at night after the heat is removed, and causing serious losses. To prevent this overcrowding the birds should be taught to roost as early as possible. If roosts are made out of one by three inch strips placed flat so as to provide a three-inch roosting surface, and these are placed twelve to fifteen inches from the floor, the birds can easily be taught to go to roost. If the chicks do not go up on the roost of their own accord they should be gently placed on the roosts after dark for one or two nights until they get the roosting habit.

POULTRY NOTES

FOR the best results turkeys, geese, ducks and hens should be kept in separate quarters.

▲ ▲ ▲

IT DOES not pay to winter poor paying birds. Get rid of the culls this fall as early as possible.

▲ ▲ ▲

KEEP the roosts clean at all times, but also remember that it is just as important if not more so to keep the nests clean.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

COLUMBIA NURSERY COMPANY

1490 Union Ave., No. Portland, Ore.

FREE An 8x10 Enlargement
With \$3.00 Worth of
Kodak Finishing. Quick Service

Films received forenoon mailed out same day. We pay return postage.

All Work Guaranteed

WOODARD, CLARKE & CO.

Alder at West Park PORTLAND, ORE.

We buy car-lots of fruit. Wire or write us your offerings.

Coughlin Brokerage Agency

Mitchell, South Dakota

Some Reliable Northwest Nurserymen

An Early Order
For Fall or Spring
Delivery

Placed with

SALEM NURSERY COMPANY

428 Oregon Building
SALEM, OREGON

Will receive careful attention and give you good choice of varieties

Additional Salesmen Wanted

Most Valuable!
Highest Price!

\$1.00 a Plant for the

UNIQUE

Double Crop
STRAWBERRY

Saves you
TIME — LABOR — MONEY
Gives you the highest profit,
the greatest pleasure.

Let Us Help You

Evergreen Plantation

New Meadows, Idaho

Capital City Nursery Company

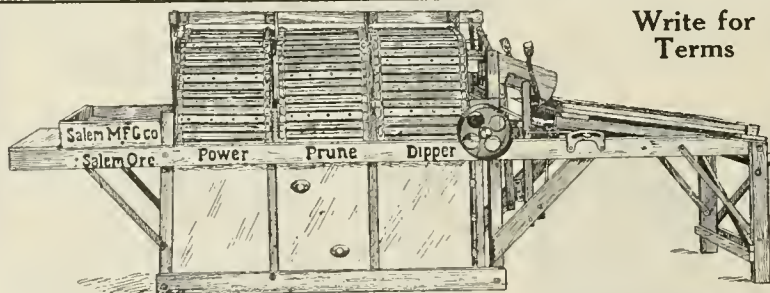
426 Oregon Building
SALEM OREGON

Will supply you with
first class stock in

**FRUIT, NUT AND ORNAMENTAL TREES,
SMALL FRUITS,
ROSES**

Send for catalog

WE Need Salesmen



Write for
Terms

**E
F
F
I
C
I
E
N
C
Y**

POWER PRUNE DIPPERS AND TRAYERS

We make the best. Write for our catalogue. This is the dipper demonstrated at the State Fair at Salem last season. Order now while we have the supply.

SALEM MFG. CO., Salem, Oregon

Factory located at 1396 North Front and Hood Streets

Marketing News of Interest

THE largest walnut crop in the history of Oregon is expected this year. The trees have largely recovered from the effects of the freeze of two years ago and are bearing heavily this year. In addition there is a large acreage of young trees just coming into bearing this year for the first time.

Reports from Yamhill county indicate that it is not uncommon to find clusters of six nuts and all indications point toward a bumper yield. The crop will go into the barest market in years, according to information from the California Walnut Association. Foreign stocks are not on hand to retard the market as they were last year and a serious failure of the French walnut crop this year indicates that there will be little competition from that source.

THE first car of Winter Banana apples of the 1921 crop was sold by the Rock Island unit, in the Wenatchee district, to G. M. H. Wagner & Son for prices that compare favorably with those received for this variety in the last two years. Three dollars a box for all extra fancy apples, \$2.50 for fancy and \$2 for C grade will be received. Last year the unit received \$3.40 a box for the first car shipped and the year before the top price for extra fancy was \$3.80.

THE entire tonnage of pears controlled by the Oregon Growers' Co-operative Association in the Willamette and Umpqua valleys has been sold for prices that are thought to be the best obtained for canning pears this season. The prices obtained were \$65 a ton for No. 1s and \$35 for No. 2s, f. o. b. shipping point. The terms of sale will permit of early advances to the grower when the fruit is marketed. The canning pears of the California Pear Growers' Association were sold at \$61.75 for No. 1s, and \$33 for No. 2s. Reports from Yakima show that the first ten cars of pears from that district sold for \$60 per ton, but that the price subsequently dropped to \$40 and \$45 per ton.

ACCORDING to reports received at Spokane, Wash., the Washington peach crop for 1921 is predicted at 25,125 tons, compared with 8,813 tons last year, when crops were unusually poor, and a crop of 30,333 tons of pears is forecasted, compared with 46,792 tons in 1920. In both Washington and Oregon the yield of all berries were reported to be about 50 per cent larger than they were last year.

NEARLY one-third of the expected 300-car apple crop of the Spokane Valley Growers' Union has been placed in the east within the last week, at prices ranging as high as \$3.00 and \$3.25 per box, for extra fancy grades, according to recent reports. Edward Peirce, manager of the Union, who is now in the east, has telegraphed orders for more than 50 carloads of apples, with prices up to \$3.25 per box, f. o. b. Spokane, shipments to be made to such points as New York, Philadelphia, Pittsburgh, Washington, D. C., and Boston.

Oregon Growers' Association Notes

EARL PEARCY, president of the State Society of Horticulture, reports that prunes will be of good size this year. As field representative of the Oregon Growers' Co-operative Association in the Willamette Valley he has made a careful study of the situation and is of the opinion that

the average size of the dried product will be 40s. Last year they ran strongly to 50s. The prunes are giving early indications of a good sugar content which will develop if weather conditions remain favorable. Last year the sugar content was low and as a consequence they dried down to 14 to 17 pounds to the bushel. It is expected that they will dry out heavier this season.

FINAL estimates show that the Oregon Growers' Co-operative Association will harvest 1000 cars of apples in the Willamette, Umpqua and Rogue River Valleys and The Dalles district. The Rogue River Valley will supply 600 cars of these. The fruit is large, well colored, and unusually free from imperfections. The fruit has more color than is usually the case at this time of the year and present indications are that the fruit will be superior to that shipped in the average years. Harvesting will probably begin a week or ten days earlier than last season. Grimes will move September 5 to 10, Wagener, September 20 to October 1, Spitzenberg and Ortley, October 1 to 15, with Rome, Newtown and other late varieties following.

We are handling Oregon and Washington garden, farm and orchard products exclusively.

Our facilities and connections for the proper distribution of carlots or less of

APPLES--POTATOES--ONIONS

assures prompt and satisfactory returns to the grower.

Let us figure with you before disposing of your crops.

W. B. Glafke Co.

COMMISSION MERCHANTS

East Third and Alder Streets PORTLAND, OREGON

recommended
BY LUBRICATION
Experts



STANDARD OIL COMPANY
(CALIFORNIA)

A grade for each type of engine

HIGHEST QUALITY

SEEDS
BULBS **ROSES**
TREES

FALL CATALOG
Now Ready

Prices 25 to 50 per cent less
This is the year to plant

Routledge
SEED & FLORAL Co.
145 147 1st St. PORTLAND, ORE.

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

FARMS FOR SALE

CHOICE ACREAGE—less than thirty miles to Portland, close to county seat and good payrolls; Good roads best of transportation facilities; Paved Columbia Highway, rail and river. Any size tracts, rich deep soil, no rock or gravel; can give easy terms. Special inducements to settlers.—**INTERSTATE LAND CO.** 248 Stark St., Portland, Oregon.

BARGAIN—Fine young pear orchard; 12 acres, 5 bearing, balance 3 years. Particulars, Owner, P. O. Box 182, Kelseyville, Calif.

FOR SALE—17 55/100 acres all cleared in Willamette Valley 30 miles from Portland. Splendid fruit or nut land, \$200 per acre. Terms if desired. B. L. Herbert, 51 E 8th St., North, Portland, Oregon.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANT to hear from parties having farm for sale. Give particulars and lowest price. John J. Black, 197th St., Chippewa Falls, Wisconsin.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book, Edward & Bradford Lumber Co., Elk, Washington.

BIG APPLE ORCHARD and by-products plant in famous Southern-Pennsylvania Apple Belt. J. P. Stewart, 305 Carlisle Ave., York, Pa.

MISCELLANEOUS

HAPPY HOME HONEY—From blossoms of alfalfa and sweet clover, in liquid form; 6 10-lb. pails, \$9.00; 1 60-lb. can \$8.40; 2 cans, \$16.00, at Mabton. H. N. Paul, Mabton, Washington.

CORN HARVESTER—cuts and piles on harvester or winrows. Man and horse cuts and shocks equal Corn Binder. Sold in every state. Only \$28 with fodder tying attachment. Testimonials and catalog FREE showing picture of harvester. Process Harvester Co., Salina, Kansas.

POULTRY

PETALUMA HATCHERY—Established 1902 by L. W. Clark, Chicks every Monday and Thursday, White and Brown Leghorns. Heavy laying strain. Safe delivery guaranteed. Send for prices and terms. L. W. CLARK, 615 Main St., Petaluma, Calif.

PULLETS—We can supply O. A. C. and Tancred White Leghorn Pullets. Rhode Island Reds and Barred Rocks at all ages—some ready to lay. Also one and two year old hens, good breeders. Exceptionally fine range-raised birds. Portland Seed Co., 180 Front St., Portland, Ore.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. **SALEM NURSERY CO.** 427 Oregon Building Salem, Oregon

AGENTS WANTED—Our prices are right. Columbia Nursery Co., 1490 Union Ave., No., Portland, Oregon.

Bees and Beekeeping

THAT beekeeping is profitable is shown by an investigation recently made by Oregon Agricultural College experts who reported that many beekeepers throughout the state had incomes ranging from \$1,500 to \$4,000, while some made earnings of more than \$10,000. The investigation also developed the fact that the demand for men trained in beekeeping is urgent. Many of the requests for trained beemen are coming from commercial horticulturists who want men trained in both beekeeping and horticulture to take charge of their orchards and bees. Large commercial apiaries are also looking for men experienced in beekeeping to manage their apiaries.

More business is reported to have been done in box apples at the annual convention of International Apple Shippers, held at Cincinnati, this year, than at any previous meeting. The largest sale reported was a block of 60,000 boxes of Wenatchee fruit.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street
SALEM, OREGON

Phone Main 6018 for
ROGERS COMPANY
Rubber Stamps, Seals
Stencils

514 Gerlinger Building
Portland, Oregon

NOW is the time to send to
Milton Nursery Co.

MILTON, OREGON

For their 1921 Catalog
Full Line of Nursery Stock
"Genuineness and Quality"

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.
Catalog mailed on request.

**How You Can Get
Better Fruit's
Apple Packing Chart**

BETTER FRUIT's apple packing chart printed on cardboard so that it can be hung in the packing house, will be mailed to anyone desiring it, on the following terms:

One card FREE with a new subscription to BETTER FRUIT.

One card without subscription.....\$.10
Twelve cards without subscription.... 1.00

BETTER FRUIT PUBLISHING CO.

Arcady Building Portland, Oregon

ORCAS LUMP LIME

Pure—Free from magnesia and in tight barrels. NOTHING SUPERIOR to ORCAS for FRUIT SPRAY or building purposes We make SWANSDOWN HYDRATED LIME as well as Orcas Poultry Grit and ground Limestone

Address **ORCAS LIME CO.** Pioneer Building, Seattle, Wash.

"In Every Respect"
says the Good Judge



You get more genuine chewing satisfaction from the Real Tobacco Chew than you ever got from the ordinary kind.

The good tobacco taste lasts so long—a small chew of this class of tobacco lasts much longer than a big chew of the old kind. That's why it costs less to use.

Any man who has used both kinds will tell you that.

Put up in two styles

W-B CUT is a long fine-cut tobacco
RIGHT CUT is a short-cut tobacco

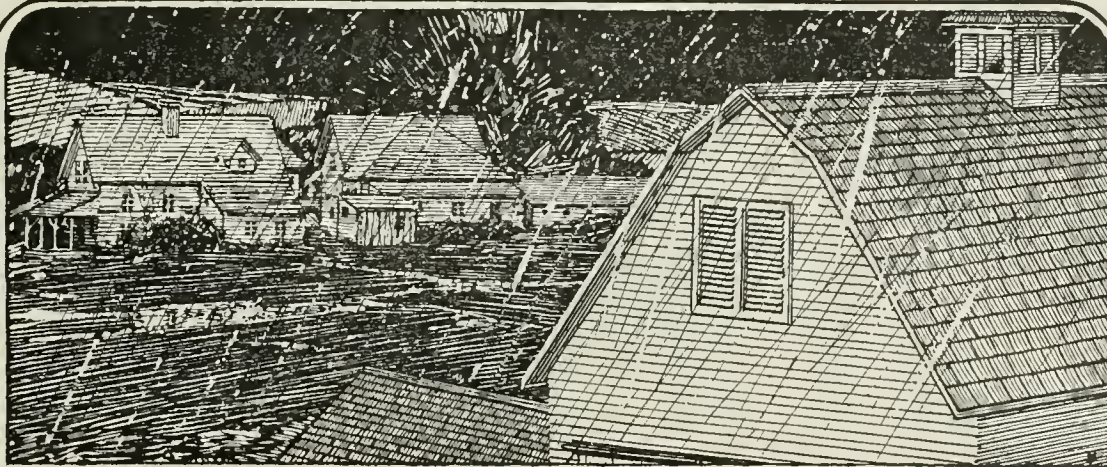
Weyman-Bruton Company, 1107 Broadway, New York City

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



Before *the rains start again*

Examine your shingle roofs. They need protection to successfully come through the heavy rains of another year's weather.

ORONITE SHINGLE OIL *Preserves Shingles*

Oronite Shingle Oil is a high-quality preservative for all shingles (either on roofs or on side walls) — to make shingles last longer through drenching rains, whipping winds and hot, drying sunshine.

Oronite Shingle Oil penetrates the fibre of the shingle with a moisture-resisting preservative that retards the evaporation of natural oils in the wood—the cause of cracking and warping—and counteracts the effect of age and exposure.

Oronite Shingle Oil is especially prepared to make shingles withstand continual exposure. It will keep your roof in good condition and give it longer life. An application of Oronite Shingle Oil to an old roof *now* may save the cost of repairs or an entire new roof next season.

You can mix Oronite Shingle Oil with colors and obtain an attractive stain and all the advantages of this shingle preservative. Ask our nearest agent for color formulas.

STANDARD OIL COMPANY
(California)

OTHER QUALITY PRODUCTS

especially prepared
for use on the farm.



Oronite Roof Paint

A high-quality protective coating for prepared roofing and metal roofs

Mica Axle Grease

Gives a durable, smooth lubricating film under every pulling condition. Keeps the axle cool; no hot-boxes, no gumming. The MICA makes it better.

Eureka Harness Oil

Preserves the original strength and life of leather and keeps it soft and pliable. Keeps harness "new looking."

Standard Hand Separator Oil

Correct Lubrication for your Hand Separator, under the conditions of high speed and close fitting parts.



ORONITE *means* QUALITY



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 XVI

OCTOBER, 1921

NUMBER 4

30Dec22
A4 Columbia Univ Libr

1921

Features in This Issue:—

Entree of the Basket Into Fancy Appledom

Thrips Injury to Apples

Commercial Possibilities of the Chestnut

Advantages of Central Co-operative Packing Plants



How Young America Can Best Celebrate National Apple Day

BETTER FRUIT PUBLISHING COMPANY
Publishers Portland, Oregon

20 cents the single copy. Subscription, One Dollar per year in the United States. Canada and Foreign, including postage, Two Dollars, Payable in American Exchange

T. J. POUPART

(John Poupart, William Ravenhill)

Convent Garden, London, W. C. 2

REGISTERED



TRADE MARK

The Largest Firm of Fruit Salesmen in Great Britain

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)
 COMMISSION THE EXCLUSIVE BASIS (Purchase propositions cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

We are pleased to announce that we have arranged for Sam Birch to again visit all our shippers. Correspondence can be addressed to him in advance, care of "Better Fruit" office.

Members of



Cables:
POUPART,
LONDON

Codes:
A B C
(5th Edition)
Marconi
International

Bankers:
Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.

SPECIAL NOTICE

We have now opened a branch at Liverpool which will be conducted on the same lines as London. Growers can communicate direct with the manager,

T. J. POUPART
54 Stanley St.
LIVERPOOL

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
 LOS ANGELES HARBOR

AND

LONDON—LIVERPOOL—GLASGOW—HULL—ROTTERDAM—AMSTERDAM
 ANTWERP—HAMBURG and HAVRE

From Pacific Coast Ports

S. S. NOORDERDIJK.....	Late September
S. S. MOLIERE.....	Late October
S. S. EEMDIJK.....	Middle November
S. S. KINDERDIJK.....	Late November
S. S. NEBRASKA.....	Late November

Loading

From Europe

S. S. EEMDIJK.....	Late September
S. S. KINDERDIJK.....	Middle October
S. S. NEBRASKA.....	Late October
S. S. MOERDIJK.....	Middle November

Loading

All Steamers Equipped with Large Coolrooms and Refrigerators for the Transportation of Fish, Fruit, Cheese and Other Perishable Cargo

For freight rates and space apply:

Oregon-Pacific Co., Wilcox Bldg., Portland, Oregon—Phone Main 4565

How Can the Farmer Prosper Unless the Railroads Prosper?

THE development and prosperity of farming in the United States have in the past gone hand in hand with the growth and development of the railroads. Ahead of or beside the courageous pioneer has gone the railway.

The railway is dependent on the farmer for the tonnage which enables it to live and conduct its business. Likewise the farmer is dependent on good and adequate service by the railway as the means of getting his products to the markets of this country and the world under conditions which will enable him to prosper.

Railway Development at a Standstill

The development of the railways has been practically at a standstill for some years. No industry can grow unless it can get people to put new capital into it. No industry can get people to invest capital unless it can pay a return on this additional capital.

Stagnation in the railroad industry is a menace to the farmer. The products of the farms are constantly increasing. Without increased means of transportation these increased products of the farms cannot be carried to market.

The Earning Power of the Railroads Was Practically Destroyed During the War

They are now trying to get it back. They want to get it back so they can provide additional locomotives and cars to handle the increase in traffic and provide for the future development of the country. They must raise large amounts of new capital to provide these facilities.

Not Asking Return on "Watered" Stock

Every farmer and business man knows it is impossible at present to borrow large amounts of money for even 6 per cent. How can the railroads be expected to raise new capital for new facilities if they are not allowed to earn at least 6 per cent, which the Interstate Commerce Commission has held they need?

Is this 6 per cent on "watered" stock? No. It is not based on stock at all, or on bonds either. It is based on the minimum value of the property which the railways devote every day to the public service in transportation—tracks, stations, locomotives, cars, shops, and so on. This valuation has been made by the Interstate Commerce Commission under the Valuation Act fathered by Senator LaFollette of Wisconsin eight years ago.

It is not based on what it would cost to rebuild the railroads at present high prices of materials and wages, but on what it would cost to rebuild them at pre-war wages and prices as they stood in 1914. A valuation based on present wages and prices would be twice as great.

Some railroads are "overcapitalized." Many, including most of the big systems, are undercapitalized. But neither in the one case nor the other does this affect the basis on which rates are made.

What Regulation Can Not Do

The farmer has just lost a friend and the country a valuable citizen by the death of ex-Judge C. A. Prouty. He was for seventeen years a member of the Interstate Commerce Commission. He was in charge of the valuation of the railroads from the time it was begun until his death. He said:

"We can regulate the railways. We cannot by legislation force one single dollar of private capital into railway investment against its will."

The farmer, by favoring regulations that will help the railways to regain their reasonable earning power, can help them to attract hundreds of millions of dollars needed for rehabilitation and enlargement of railway facilities and for increased and improved transportation service to the farmer.

The further development of the country will be arrested and the farmers and all other classes seriously injured unless the railways are given opportunity to raise the capital needed to enable them to make their service better and more adequate.

Association of Railway Executives

61 BROADWAY
NEW YORK

764 TRANSPORTATION BUILDING
CHICAGO, ILL.

MUNSEY BUILDING
WASHINGTON, D. C.

Those desiring further information on the railroad situation are requested to address the offices of the Association or the president of any of the individual railroads.

SYKES' SERVICE BULLETIN

Vol. 1

Portland, Oregon, October, 1921

No. 2

What Is Sykes Pack?

The Sykes Safety Separator Apple Wrap is a moderately thick flexible sheet of wood pulp, cut to fit the standard apple box.

Each layer or tier of fruit is separated from the one above and below by one of these Separator wraps. Each size of fruit has a special wrap insuring the proper position of the fruit in packing as well as preventing the individual apples from touching each other.

A series of cups are stamped in a mathematically correct position, according to the size of the fruit. A series of cuts in each cup provides tongues of paper between the individual fruits of each tier—the body of the wrap itself separating the layers or tiers—hence the name "Separator."

This is the SYKES SYSTEM—an interlocking of correctly sized fruit, correctly packed, forming one solid structure of fruit, the individual apples being separated from each other by these cuts or tongues of the cups. If there be any shrinkage during storage, each apple retains its position, the interlocking principle preventing any bruising, hence helping to prevent any decay.

How to Pack Sykes

Many thoughtless criticisms have been made of the Sykes Pack by those who have never seen the "Sykes System" CORRECTLY packed.

The fundamental principle of the "Sykes System" is summed up in the term "bridging the arch"—in other words, an INTERLOCKED structure. A special wrap is provided for each standard size of fruit. If the wrong wrap is used, the experienced Sykes packer detects mistake quickly. If the fruit has been sized wrong, he quickly catches that error.

The first layer or tier **MUST** be placed **CORRECTLY** in position. It is the **FOUNDATION** of the "Sykes System."

The box is set flat on a flat table. A Separator wrap is placed in the bottom of the box. The first tier of apples is placed, stem down, in the cups of the wrap (the number and arrangement of cups varying with the size of fruit). It takes but a few moments to place the first tier **CORRECTLY**. If the fruit has been properly sized, the individual apples will not touch each other, the spaces between the apples forming uniform triangles.

When the first tier has been placed, a Separator wrap is placed over the tier. The cups nest in to the triangular spaces formed by the apples of the first tier. The fruit of the second layer is then placed in the cups, completing the second tier. Again, the apples of the second tier do not touch each other—the spaces between the apples again forming small triangles.

The third Separator wrap is placed in posi-

tion. The cups again nest into the triangular spaces. This process continues until next to the top tier is in position.

A soft wood board, which will fit easily into the box, is used to press down the fruit uniformly—light pressure in the center, heavier on ends—**LOCKING** each tier into the triangular spaces in the tier below—in the layman's words, "bridging the arches."

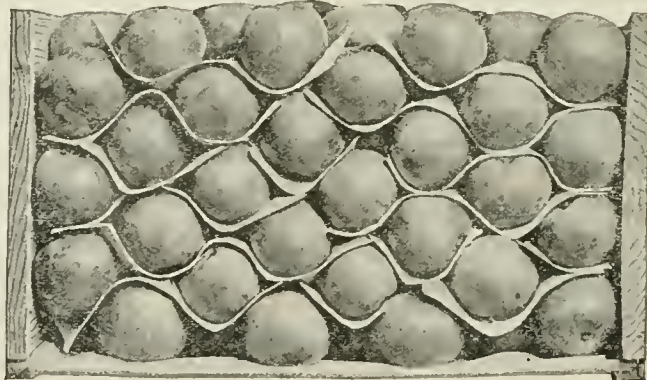
The top tier is then placed into position, giving the required bulge at the center. The experienced packer soon learns how to make a finished job in placing the top tier or facing the box. To protect the top tier another Separator wrap is placed in position and the lid nailed fast.

Every tier or layer is thus uniformly wedged into the spaces below, with the exception of the first or bottom tier, which forms the foundation for the series of arches.

Oiled Wraps Popular

Following the several experiments made by Federal experts during the past two seasons, using various oil formulas, the use of oiled wraps in the Northwest is growing rapidly. Oiled wraps appear to be the **NEXT** step in the evolution of Scientific Apple Packing.

Oiled wraps, it has been proven, reduce the amount of scald in storage—practically all of the experiments have proven most of the claims for oiled wraps.



This is a Side View



This is a side view of a Syked apple box showing how each tier of fruit nestles into the spaces in the tier below—the tongues of paper in the cuts or cups separating the individual apples while the entire sheet or wrap separates the tiers. This gives perfect aeration of fruit, assisting nature in preventing scald and decay.

At a trifle additional cost, Sykes Safety Separator Wraps, treated with an approved oil preparation, may now be had in limited quantities. Next season there will be an ample supply for all packers.

The oiled wrap, without doubt, has come to stay—progressive manufacturers are preparing to meet the demand.

Error in Figures

In our September Bulletin, under the caption, "Sykeing California Oranges," the types made us say "It takes 83 wraps to pack a box of oranges."

This error was so apparent that scores of readers have called our attention to it.

This paragraph should have read, "1000 wraps (1 bundle) will pack 83 boxes of oranges." Every packer who read the September Bulletin knew instantly that the figures were mixed.

Why Pack Sykes?

Does the hit-and-miss practice of close paper wraps, with corners of boxes stuffed with paper, or frequently a small apple wedged in to make a tight layer—produce the correct pack?

What is the answer—if you have **SUPERIOR** fruit—which should be sized correctly and packed correctly—if you expect it to keep in storage?

SUPERIOR fruit has a value. Is it not false economy to pack superior fruit as cheaply as possible—thereby taking all of the risks of common or cold storage?

Sykeing Branded Apples

Does it pay to pack **GOOD** fruit in the cheapest manner possible—with the cheapest wraps known—and under a hit-and-miss practice?

Have you a right to expect good **RESULTS** from such a pack? Is it not logical that you would get **BETTER** results from **CORRECT** sizing and **CORRECT** pack?

Until you use Sykes Safety Separator Wraps, you will never know how well your fruit will keep.

During the convention of the National Restaurant Owners' Association, which met in Los Angeles October 3-8, several splendid displays were made of Northwestern apples which had been branded by the Alsberg Electric Branding Machine.

The display of the "Blue Goose" and "Skookum" packs was a remarkably fine one. Practically every delegate visiting the fruit show was favorably impressed.

By courtesy of the American Fruit Growers, who made the display, several boxes of Syked Northwestern apples had a prominent place in the exhibit. The appearance of these boxes was most attractive.

If your supply house cannot furnish you with Sykes Safety Separator Wraps **NOW**—please notify **BETTER FRUIT** at once—and your order will be promptly filled.

EXCLUSIVE DISTRIBUTORS SYKES WRAPS

BLAKE-McFALL CO., Portland, Oregon
AMERICAN PAPER CO., Seattle, Wash.

SPOKANE PAPER & STATIONERY CO., Spokane, Wash.
PACIFIC FOLDING BOX FACTORY, San Francisco

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, OCTOBER, 1921

NUMBER 4

The Entree of the Basket Into Fancy Appledom

By the Editor

As the price of fine quality apples has risen and a greater number of persons are now living in apartments and other quarters where the storage space is restricted, the demand for something in the way of a container that would be larger than the old-time peck measure and yet something smaller than the barrel has been gradually growing. In the Far West this demand has been supplied by the extra fancy or fancy selected packed box. Boxes, however, by reason of cost, are not available in many of the apple growing sections of the country in addition to the fact that they are not as well known or as well liked as baskets, which can be put to many uses after they are emptied of their fruits. Another reason for the greater

use of the basket than formerly for shipping fruit is that it is being more scientifically made—that it permits of a tight, fancy pack and is growing in all sections of the country as a practical, as well as a show container. The evolution of the old "bushel" basket as a receptacle for the better grade of potatoes to its present status as a container for high grade fruit is due, largely, to the persistence of the Package Sales Corporation, an organization that has advocated its use in and out of season. In fact, much of the data used in connection with the following article was secured from this source and we are presenting this story to our readers because the use of the basket as an apple container in the Far West is rapidly increasing.

sized. Grading consists of removing fruit that is wormy, scabby, misshapen, dirty and otherwise injured so as to render it unfit for high grade packing.

Sizing refers to the operation, either mechanically or by hand, of sorting apples into different sizes according to their transverse diameters. A number of mechanical sizers are on the market and used extensively by commercial fruit growers. A few of the best known graders are the Prescott, Starcher, Cutler, Pease and Burke. After the culls have been removed the fruit can be sized into the different grade sizes.

Where apples are packed on what is known as "Orchard Run" basis the work is usually done in the orchard. In this case no sizing is done except to remove the very small apples. The only grading is the removal of wormy, scabby and decayed fruit, which is usually accomplished as the fruit is picked. The baskets are, of course, jumble packed with a smoothing or semi-ringing of the face before the cover is put on.

AS LIVING conditions have changed so have the desires of the fruit buying public, not only for better fruit but also for smaller containers. Where formerly apples were only sold in large containers, such as the barrel, they can now be purchased in smaller ones which are far more suited to the needs of the average family. The bushel basket has been found to fill the wants of the consumer because it is not too large or too small. It also gives the buyer a better chance to see what he is getting because of the wide display surface permissible in this style of container. The grower who is proud of his fruit has a splendid opportunity of showing it to the buyer when in baskets.

It can be truthfully stated that the buying public is developing a desire not only for a smaller container, but also for containers with good arrangement and proper grading of the contents. There has been a vast improvement in grading and packing in the last few years, but there is still room for bettering existing conditions. It is a trade axiom that the better the "look" the quicker the "sale," and every enterprising grower realizes this statement to be the truth.

THE round stave bushel basket has a capacity of 2150.42 cubic inches or 32 quarts dry measure. The web is composed

of 20 staves, 36 inches long and of varying thickness, according to the density of the wood used. This web is so constructed as to form a basket having a height of $11\frac{1}{4}$ inches, a bottom diameter approximately 14 inches and an inside top diameter of 17 inches. The staves are securely stapled to the top and center hoops. All staples should be driven through both top hoops and well clinched on the inside. The handles should also be driven through both top hoops, the ends bent upward and against the inside hoop. They must be exactly opposite each other.

In order that the contents of the baskets may arrive on the market in perfect condition it is necessary that the basket be made of sound material, of tight construction and good workmanship. It has been proven to the sorrow of a great many growers that by using weak or poorly constructed baskets the contents have arrived on the market in bad condition and in many instances have failed to arrive at all. It is imperative that well made baskets be used if satisfactory results are to be obtained.

IN MANY small orchards apples are packed in the orchard. This, however, is not true of most of the large commercial sections where regular packing houses have been built. The fruit, after picking, is brought to these houses and graded and

THERE are two methods of packing apples in basket packages, the jumble and ring pack. The jumble pack consists merely of putting apples into baskets in a haphazard way with no attempt at arrangement. Some growers put a face on a jumble pack, while others leave the apples in whatever position they happen to be after being put into the basket. This latter method should be discouraged in most cases. In the ring pack the fruit is placed in concentric circles, beginning at the bottom of the basket and extending to the top.

Facing is the arrangement of the fruit on the top of the basket after it has been partly filled. It is this factor alone that determines the appearance or "looks" of the basket. • Looks goes a long way in in-

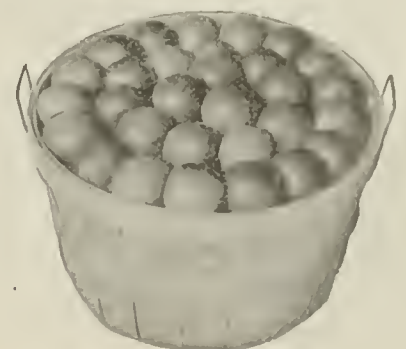


Fig. 1. Checks up, stem to calyx style of facing

creasing the sale value of the package, which emphasizes the fact that all baskets should be ring faced. In order to receive top prices baskets should present a very at-



Fig. 2. Packed basket, showing wire side hooks and 19-inch pad

tractive appearance. This can only be accomplished by facing.

The styles of facing most commonly used are:

1. Stems up, fruit in concentric circles.
2. Check up, stems out to edge of basket, fruit in concentric circles.
3. Check up, stems to calyx, fruit in concentric circles.

In the jumble pack the apples, after having been graded and sized, are run into baskets without bruising. Care should be used in this operation, for apples falling but a few inches will bruise and while the bruise may not be apparent, in a few days it can be noticed and at a later date offer chance for deterioration. It is preferable to pack graded and sized apples rather than orchard run. Only sized apples and one size at that should go into the basket. It is bad, and in some cases an unlawful practice to mix sizes. As the basket fills with apples it should be smoothed around so as to fill up all depressions and secure a tight pack. When the basket is half full a "follower" or "racker" should be used. This covers the fruit and in racking it prevents the apples from bouncing around and being bruised. When the basket is filled to within two or three inches of the top the "follower" should be again used and the basket well racked. This prepares a good foundation for the face if one is to be put on.

It is very important that a bushel of jumble packed apples be well racked. Racking consists of a sharp shake from side to side with the object of settling the apples in place. It should be done on a solid foundation, such as a plank or the floor of the packing house, as it can never be done successfully on the ground. Racking should be done with a slight, sharp jar, rather than a swinging, throwing motion. Unless the baskets are racked properly the fruit will not be settled and the baskets will have the look of a slack pack when the basket arrives on the market. It is absolutely necessary in good, jumble packing that the baskets be well racked.

RING packing a basket is considered by some growers to be the best method. Undoubtedly for extra fancy fruit and for the larger sizes as well as for apples that will be put into cold storage ring packing is to be preferred. Do not confuse ring packing with ring facing, as a jumble pack and the ring pack are both faced. Ring packing is the placing of the fruit in the basket in concentric circles. Start at the bottom and against the sides and pack the fruit in rings. It is preferable to pack the fruit stem to calyx in making the rings and after the first ring has been completed put in the second ring and continue until the entire layer has been finished. The second layer is put directly on top of the first layer and so on until the basket has been packed and is ready for the facing on top.

In both the jumble and the ring pack the fruit in the center of the basket will be higher than the fruit around the side of the basket. This is caused by the center of the bottom being raised. This raised center causes an increased height of bulge in the center of the face and is one of the very strong points about the packing of apples in bushel baskets. It gives a bulge without using a larger sized apple for the center.

The ring packed basket holds very tight in transit, and it is not necessary to rack it unless fruit of uneven size has been used in making the layers. It should not be packed so high that there will be too great a bulge above the edge of the outside hoop when the facing is put on.

THE fruit selected for the facing of the baskets should be such as to fairly represent the quality of the contents. If the apples are not graded to size it will be unfair and unlawful to have the larger size in the face. It will also be unfair to have apples of better color on the face than those in the rest of the basket. In short the face must represent a fair and uniform sample of the fruit in the baskets. The fruit in the face should be placed to the best advantage. To obtain a good looking face the fruit must be uniform in size.

THE STYLES OF FACING

1. Stems Up, Fruit in Concentric Circles. This face is very popular and is no doubt used as it is similar to the facing of a barrel pack. This style does not permit the tightest face or provide the greatest possibility of showing the maximum color of the apples. This style of face is not so popular with the growers as that of cheeks up. Where the basket has been ring packed from the bottom up this face is easy to put on.
2. Cheeks Up, Stems Out to Edge of Basket, Fruit in Concentric Circles. This face is the least popular of the three methods of facing does not permit as tight a pack and besides it requires more time in preparation than the other styles.
3. Cheeks Up, Stem to Calyx, Fruit in Concentric Circles. This face (Figure 1) is no doubt preferred to all other styles. It

allows the greatest possible display of the well colored cheeks, it makes an even, smooth, tight pack and prevents slipping or displacement of the rings. This style of face can be put on in much less time than other styles.

IN SIZING fruit for bushel baskets the size is the transverse diameter rather than the longitudinal diameter. This is measured by a line through the thickest part of the apple, which is at right angles to a line drawn from stem to calyx. The average transverse size of the apple is considered in this work and not the longitudinal diameter.

Five sizes of apples are listed below and for the convenience in this bulletin the different sizes have been numbered. They are:

- I. 2 in. to 2 1/4 in.
- II. 2 1/4 in. to 2 1/2 in.
- III. 2 1/2 in. to 3 in.
- IV. 3 in. to 4 in.
- V. 4 in and above

Due to the variation in the size of the different classes mentioned the number of apples in the different rings of the face will vary slightly. It would be ideal to ring face with apples that were half way between the minimum and maximum of each size. This, however, is not possible unless a hand sizing board is used or the grader is so equipped that it sizes accurately to the transverse diameter of the size being packed.

In the experimental work on which this data is based the variety used was Ben Davis. The general shape and conformation of this variety is similar to most varieties except those shaped like a Delicious, the York and other off-shapen varieties. The figures obtained are for sizes of apples which were run through the Starcher grader, frequently called the Virginia Fruit Sizer.

THESE figures are only approximate for the different sizes, and no figures can be exact because of the variation in the



Fig. 3. Showing wrapping of fruit except center rows to show prospective purchaser quality of fruit. Also label on top of basket

commercial sizes being packed. The variation in some sizes will be from a quarter
(Continued on page 15)

Commercial Possibilities of the Chestnut

By Knight Percy, Horticulturist

The chestnut, while not of the high grade of some of the other American grown nuts, finds a ready and profitable sale, particularly on the fruit stands in many of the larger cities in the East. Of late years it has been found that it is being attacked by a pest that is greatly lessening its yield except on the Pacific Coast. The possibilities of its propagation in the latter region therefore are of wide importance and are pointed out in the following article by Mr. Percy.—Editor.

THE chestnut, at the present time, is one of minor importance as a commercial product of the Northwest. There are but very few commercial plantings and those are small in extent. The behavior of the trees in these few small plantings, together with the performance of the many trees planted all over this section as shade and ornamental trees have demonstrated that our climate conditions are suitable for chestnut culture. An analysis of conditions in the eastern chestnut growing regions should be made before we decide whether we are warranted in making commercial plantings here.

Twenty years ago great chestnut forests were growing in the eastern part of this country. Today these forests are disappearing, apparently doomed to extinction and that quickly, too. In 1904 it first was noticed that many of the trees in the vicinity of New York City were dying of some strange disease. Investigation by pathologists demonstrated that the disease was caused by a fungus, *Endothia parasitica* by name. It spread rapidly all through the native chestnut area and by 1916 was found in 13 states, and had caused damage estimated at \$50,000,000, half the total valuation of the American chestnut forests. At the rate that it is eating into the forests the American chestnut will soon be wiped out of its native home.

With most diseases of this nature there always appears some immune trees in the forests or the orchards from which may be bred resistant strains of trees, but no American sweet chestnut tree has yet been found that shows any degree of resistance.

IT HAS been discovered that this fungus has its home in China, Japan and Korea and that it was evidently transported to America on imported nursery stock. The fungus spreads by means of birds, insects, wind, rain and by shipment of nursery stock, chestnuts and chestnut timber on which the bark is permitted to remain. It causes death by penetrating the bark and attacking the cambium and sap wood areas.

This disease is deadly both to American and European varieties. It is spreading rapidly, 99 per cent of the trees in Eastern Pennsylvania already have been killed according to reports. None of our American and European varieties are immune, although certain nurseries have claimed the Paragon to be so. The disease is practically uncontrollable, although where one has but few trees he can keep it in check by cutting.

An embargo is needed to protect the uninfected western district. The disease cannot be detected on nursery trees. We should not import chestnut trees of any kind from any of the blight districts of the East, which means from any of the native chestnut area.

The Japanese and the Chinese chestnut species are attacked by this fungus, but the injury seems comparatively light since these species in their agelong struggle with the blight have developed resistant strains. The hope of eastern United States to remain a chestnut producing section seems to be in discovering some Japanese or Chinese variety or a hybrid that is blight proof and which at the same time has other qualities which are desirable. Dr. Van Fleet, of the United States Department of Agriculture, has developed a number of hybrids between the Japanese chestnut and our native chinquapin, which hold considerable promise to the eastern growers.

THE chestnuts of the world are of several species. The American chestnut, known to botanists as *Castanea dentata*, is a tall straight tree, when grown in forests and produces nuts of the highest quality, although smaller than those of most other species. There are comparatively few named varieties of this species, the Rochester being perhaps the leading variety.

The European species is known to science as *C. sativa*. Its tree is smaller than that of the American species, but its nuts are larger, although of poorer quality. Blight resistance is greater than that of the native chestnut, but not enough to permit it to survive when planted in a diseased section. There are many varieties of this species, although most of these are varieties that originated in this country from seedlings of the European species.

Named varieties imported directly from Europe have not succeeded as well in Eastern United States as have the varieties originating on this side of the water, although it is claimed that many of these named French varieties, when grown on the Pacific Coast do exceptionally well. This we would expect in keeping with the well known horticultural law that plants imported from the Asiatic Coast countries do better in eastern America than on the Pacific Coast while plants from the western Europe succeed better out here than in eastern America. Numbo and Paragon are

two of the most popular named varieties of European chestnuts growing in the East.

THE Japanese chestnut, *C. crenata*, is highly resistant to blight, has a very large nut, although its quality is so low that it usually has to be cooked to be palatable, is precocious, a prolific bearer and produces an earlier maturing nut than does either of the above mentioned species. The tree itself is semi-dwarf. It seems to have everything but quality of nut to make it a desirable nut producing species and plant breeders feel that they can improve the quality of the nut and are now working upon this problem. Alpha, Beta, Parry, Coe, Boone and Giant are varieties of this species.

The Chinese chestnut, *C. molissima*, is a relative stranger in this country and we know less about it than the others. It makes a taller tree than the Japanese and produces nuts of good quality.

We have not experimented with the chestnut enough in the Northwest to be able to say just what soils are best, but it appears to do well on most of our fruit soils where drainage is good.

Spacing of 40 to 45 feet seems to be about the need of the American and European varieties, while the Japanese tree will do with a 30-foot spacing. General culture is about that of the apple orchard. Little is known regarding pollinization, but the general advice is to plant several varieties. The Japanese varieties are apparently self fertile.

One grower in the Middle West reports the following yields from a Boone seedling tree Eight pounds the sixth year; 26 pounds the ninth year; 50 pounds the 12th year; 80 pounds the 15th year, and 140 pounds the 17th year. He received 25 to 40 cents per pound in the Chicago market that year.

One grower near Salem with 20 crowded trees, all seedlings, harvested an average of 50 pounds per tree from trees in their twenties. One tree yielded 100 pounds. We have records of other Oregon trees that have borne as high as 150 pounds of nuts, and of a number that have averaged 50 pounds per tree for years, which would give 1,200 to 1,500 pounds per acre.

Most of our nuts are high in fat content and fairly high in protein content. The chestnut, however, is low in fats, but very high in carbohydrates. Its composition and food value is very close when analyzed to that of corn meal or of wheat bread. Many of the Europeans use it much as we use the potato, to supply the starches in their diets. They use this nut boiled, roasted, made into cakes and in many other forms. It enters into their diet very extensively. They also use it for feeding hogs as do the Japanese. It has a high feeding value and acre for acre will produce more

fattening value for hogs than will a 25-bushel yield of wheat. A few chestnut trees planted on waste land would in a few years serve to fatten the hogs for the winter's supply of pork for a farmer, thus releasing more valuable land now used for raising hog feed.

AS to the future of the chestnut in America: The native forests of the East are doomed. Any chestnut industry that may be maintained in the present American chestnut regions will have to be based on resistant hybrids that are now being tried out. Parts of the Middle West are planting a few chestnut orchards and these sections many develop plantings to supply the market of the East in case they can keep the blight out. The Pacific Coast is the only remaining section that may step into the breach. This section has the climatic conditions necessary to success and is fortunate in not having any native chestnut forests, hence will have less trouble with diseases and insects than will an old growing region. We know we can grow the nuts commercially. Our question is simply this: Is the eastern market attractive enough to warrant our growers, who can do so well with filberts and walnuts and with so many fruits and berries, to plant chestnuts instead of other nuts and fruits?

Pomologists to Meet

THE thirty-eighth convention of the American Pomological Society will be held this year in Toledo, Ohio, December 7, 8, 9. The meeting will be in conjunction with the National Farmers' Exposition annually held in that city. A considerable exhibit of fruits and by-products will be staged in connection.

The American Pomological Society, founded in 1848, is one of the oldest agricultural institutions in the country. It has had a long and successful history and has been of large service to the fruit industry throughout its life. Its membership is found in the United States, Canada and a number of other foreign countries.

R. B. CRUICKSHANK,
Secretary-Treasurer

Another Friend

*Kennewick, Wash., Aug. 24, 1921.
Better Fruit,
Portland, Oregon.*

Enclosed find money order for \$1.00 for a year's renewal to Better Fruit. Wish to say that there isn't any reading matter that enters my house that I take as much interest in as I do Better Fruit. Keep the good work up, for we are with you as long as we are in the fruit game.

*Yours truly,
J. W. TYSON.*

Picking for Flavor and Keeping Quality

By F. W. Allen, Assistant Professor of Pomology, University of California, Berkeley, California

Continued from the September Number

IN the storage work which the U. S. Department of Agriculture has been conducting in the Northwest for a number of years, the effect of maturity at the time of picking in relation to these troubles has been studied. For comparison two pickings of fruit were made from the same trees ten to twenty days apart. The first, or "immature," picking was made at the beginning of the commercial picking season for the variety. The second, or "mature," picking was made twenty days after the first, usually a few days later than the last commercial pick. These lots, comparable in all other respects, were stored immediately at a temperature of between 31 to 32 degrees F. Careful inspections were made four times during the winter, beginning about the first of January and continued at intervals approximately six weeks apart. One-fourth of each lot was taken out of storage at each withdrawal, inspected, and held in an ordinary warehouse room ten days. The fruit was then inspected again and discarded. The temperature of the holding room was usually between 50 to 60 degrees F. Some of the data obtained on apple scald with Rome Beauty and Winesap, published in Department Bulletin 587, are as follows:

The work carried on as related to Jona-

than spot shows a very close relation between maturity and the percentage of fruit affected. With some twenty lots where the fruit was picked at different stages of maturity those of late pickings developed from three to six times as much spot as those of the earlier pickings. These results are in accordance with the general opinion and observation of growers.

WHILE it may be stated that additional flavor or dessert quality might be gained by later pickings of some varieties, yet in so doing some of the earlier sorts would pass their best eating conditions very quickly and their season would be limited to a much shorter period than it should be. Later varieties cannot be left unpicked much later than is usually customary on account of the danger of freezing. Even when actual freezing temperature is not a factor, delayed picking—in some cases delayed for size—often results in a high percentage of water-core. This condition is most often seen in the Winesap.

It would seem, therefore, very difficult to lay down any hard and fast rules relative to the time of picking which would hold good in all cases. From data thus far obtained Jonathans have shown less Jona-

Condition	ROME BEAUTY (Four-year)				Average		4th Withdrawal	
	1st Withdrawal Jan. 8 to 12		2nd Withdrawal Feb. 16 to 19		3rd Withdrawal Mar. 31 to Apr. 2		May 4 to 11	
	Mature	Immature	Mature	Immature	Mature	Immature	Mature	Immature
Bad Scald:								
At withdrawal.....	0	0	20.5	1.0	48.9	3.5	58.9	
10 days later.....	1.7	49.9	5.4	70.5	10.4	81.5	17.8	81.6
Decay:								
At withdrawal.....	0	.1	0	0	0	.2	.1	.4
10 days later.....	.2	.6	.2	0	1.6	9.8	2.7	18.0
	WINESAP (Three-year Average)							
Bad Scald:								
At withdrawal.....	0	0.1	0	7.6	0	15.5	0.6	15.5
10 days later.....	0	9.6	.2	13.9	3.3	25.7	11.3	33.5
Decay:								
At withdrawal.....	0	0	.3	.3	.5	.3	.5	.6
10 days later.....	.1	.1	.3	.3	.8	.5	.7	.7

FROM this data it is seen that these varieties are attacked much more quickly and seriously when picked prematurely than when picked at full maturity. The most practical remedy for this trouble then is picking at proper maturity, as no other factor has such an important bearing on the amount of scald which develops in storage.

Data obtained during the seasons of 1918 and 1919, while the writer was in charge of these investigations, show that with Stayman Winesap the percentages of scald on the first and second pickings of fruit were similar to those given above, while in the case of a third picking made ten days after the second and twenty days after the first, the percentage of scald was negligible. It is thought probable that the cells which make up the skin of the immature fruit are weak and undeveloped and therefore break down quickly in storage. This may also explain the physiological decay which often follows severe scald.

than spot when picked comparatively early. Stayman Winesaps and Grimes Golden gave a much smaller percentage of scald when allowed to become more mature. Each grower must, therefore, consider his varieties and the probable time they are to be held before reaching the market. Most varieties should be of normal size, and in red-skinned sorts they should be of good color. The flesh, however, should be quite firm, or "hard ripe." Green varieties should have the green color changing somewhat to a whitish or cream tinge. There is no doubt but that the proper time for picking a variety is comparatively short, and after harvest is once started it should not be delayed.

TO avoid lice and other vermin keep your hen house light and dry. The greatest preventive of both vermin and disease is sunlight. You will do well therefore to provide plenty of sunlight and dust baths. A good insect powder added to the dirt in the dust bath will prove an added protection against lice and mites.

The Advantages of Central Packing Plants

By John H. Watling, Monitor, Washington

The central co-operative apple packing plant is becoming recognized as a great aid in handling the crops in communities where the yields on individual ranches are small. In handling the outputs of the ranchers in one of these plants equipped with the latest appliances it can be done rapidly and cheaply with a comparatively small investment to its patrons. It is this feature that is taken up in a colloquial way in this article and worked out to an interesting conclusion.—Editor.

"HOW are you to pack your apples this fall, Brown?" I asked a neighbor of mine the other day.

"As usual, I suppose; do it at home by a crew," was the answer. "I'm not well prepared for it, either. I need a larger packing shed and I could use a storage cellar, but the cost of building is so high just now that I must get along with what equipment I have."

"What do you think of sending your fruit to the new central packing plant?" I asked.

"I haven't given it much thought," replied Brown; "it's a new idea in this country, and I'm not sure it will appeal to the growers. What do you think of it?"

"I believe it will solve the packing problem for a large number of orchardists," I replied. "In the first place most growers have but small orchards ranging in size from five to ten acres. For each owner to build a suitable packing and storage plant with the most necessary mechanical equipment, even if he does not install graders, conveyors, elevators and so on, would require a large sum of money. Whereas, if a central packing plant were patronized it would render a plant on each tract unnecessary."

"That's quite true," said Brown; "it would conserve building and equipment. The latest labor-saving devices could be installed and the entire cost would be but a fraction of the cost of building a number of individual plants."

"Then, too," said I, "a plant patronized by a large number of growers would continue in operation all fall and winter. This means that the greatest amount of service would be yielded by the investment. In the orchard the packing plant is in use one or two months of the year at most. The rest of the time it stands idle, as it is seldom used for anything else, and earns nothing."

"I can see that," said Brown. "I also believe that the fruit would be put on the market in better order. That is, the early varieties would be packed, shipped and on

the market before the warehouses became congested with the later apples. In fact, one variety of apples throughout the community might be packed and shipped before another kind were packed. This, of course, would be of much benefit to the buyer."

"I believe," said I, "that the condition of the apples would be much better if they were packed in a central plant, for a pre-cooling room would be provided. On no orchard have I seen such a place. The low temperature of this place, where the apples would be put to cool upon delivery, would stop the ripening process and check the consequent breaking down of the fruit cells, and thus keep the fruit in the best condition for either storage or market."

"There is something to that," Brown replied. "The fruit could be hauled direct from the orchard to the plant. On many a tract the apples stand exposed to the hot sun or in a warm shed for days before being packed. This treatment sometimes ripens the fruit to such a degree that it cannot be stored but must be rushed to market regardless of the demand for the variety."

"One advantage of the hauling right from the orchard," said I, "is that the fruit would be handled at home but once. If the fruit is packed at home it must be unloaded, carried to one side, sorted, again and placed aside, packed, stamped, and lidded, and again set aside before it is loaded on the wagon or truck and taken to the warehouse. All this handling must generally be done by hand. At the warehouse, fruit must pass inspection. If fault is found with quality or pack, the fruit must be taken back home and re-sorted and packed. All this labor and annoyance would be avoided by patronizing a central plant."

"Packing at a central plant would help standardize the grades," I continued, "the fruit of all the growers would be packed quite uniformly. At home, although the same definite directions are given by the

buyers to each grower, differences in quality and color exist."

"I believe one important advantage to the plan is that the grower could concentrate on the picking," said Brown, and probably do much of it himself. He could at least see that his fruit was picked with proper regard to color and without being bruised."

"That's true," I replied, "one's harvesting crew could be greatly reduced and the picking could be finished at an early date. That's a rather important advantage should an early winter set in. It would lessen the danger of losing apples by sudden frosts."

"Not having packers, sorters and the necessary handy man would greatly lighten the work in the household," said Brown. "My wife is not very well this fall and dreads the ordeal of cooking for so many hands. I wish it could be avoided. Then too, we feel obliged to serve the crew heavier and more elaborate meals than we would need for ourselves."

"In many instances," said I, "growers are ill equipped to house and board extra help, and it is often difficult for the growers with a small crop to hire competent packers."

"I realize," said Brown, "that a central plant would attract the most skilled workers because of the long season and the high wages made possible by the labor-saving mechanical equipment."

"In fact," he concluded, "I believe that, in spite of prejudice, and some practical difficulties, the time may soon come when a large percentage of the apples grown in the Northwest will be packed in central plants. I believe I'll try it."

Melons should be cut with as long stems as possible when harvested, and they should be loaded within a few hours after cutting. Before loading, the car should be thoroughly cleaned and provided with bedding of dry straw.



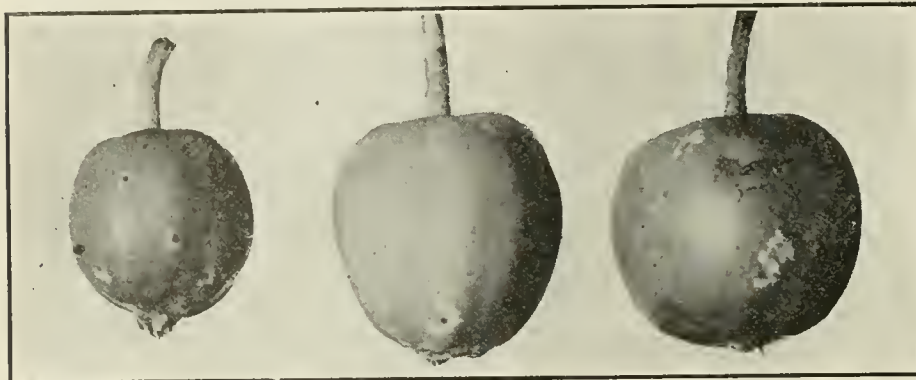
Photo by U. S. Dept. Agriculture
Fig. 1. A well constructed community apple packing house

A Thrips Injury to Apples

By E. J. Newcomer, U. S. Bureau of Entomology, Yakima, Washington

IN 1914, when I was first stationed in the Pacific Northwest, my attention was called to certain irregular whitish spots that were quite prevalent on apples. Since then I have seen these spots on almost all varieties of apples wherever they are grown in the Northwest. The spots are frequently very common, sometimes as many as twenty-five or thirty occurring on a single apple. These "pansy spots," as they are sometimes called, invariably show a dark center, or puncture,

In 1920, Mr. B. B. Fulton, of the Oregon Experiment Station found what he took to be a thrips egg shell in one of the punctures, and in May, 1921, I began examining apples shortly after the blooming period. I found newly-hatched thrips larvae very common in the calyx cups. One lot of 100 apples harbored 89 of these thrips larvae. By rubbing off the pubescence of these small apples, I was able to find the whitish spots already present, and



Effect of Thrips on Half-Grown York Imperial

and are quite obviously caused by an insect. While in most cases the spots practically disappear before the fruit is mature, in certain varieties they persist, and cause the fruit affected to be lowered in grade. In any event, they are the cause of much inquiry on the part of apple growers as to their origin and economic importance.

The spots are present on the apples very soon after blooming, and during June and July are usually rather conspicuous. (Fig. 1). As the fruit grows, the white area spreads out somewhat, and on most varieties gradually assumes practically the color of the rest of the surface, until at picking time it has very largely disappeared, only the small and inconspicuous puncture remaining. This looks very much like a lenticel and in no way affects the grade. On some varieties, notably the McIntosh (Fig. 2), the York Imperial and the Northern Spy, the spot shows very conspicuously at maturity and sometimes as much as 25 per cent of the crop is injured in this manner, with a consequent reduction in grade.

For the last seven years I have attempted to find the cause of this spot, but with no success until this year. The spots were evidently produced at about the blossoming time of the apple, but did not become noticeable until after the calyx cups had closed, by which time the insect that caused them had apparently disappeared. I have been able to prove that these spots are not produced by any of our apple-feeding aphides, nor by the tarnished plant bug, and Mr. Childs, of the Hood River Experiment Station, has shown that they are not the work of the leaf hoppers, though the idea is still quite prevalent that leaf hoppers are the cause of these spots.

after a careful examination of a considerable number with a binocular microscope, I was able to find some which contained a thrips egg in the center of each spot. The egg is very small, less than a half millimeter in length, white, and very delicate. After being exposed to the air a few moments, it begins to shrivel. The egg is deposited at nearly right angles with the surface of the apple, and just beneath it, one end of the egg closing the hole made by the thrips ovipositor. The larva, upon hatching, emerges through this outer end, and leaves a small hole in the skin of the apple. The irregular, whitish area is the result of irritation produced by the presence of the egg in the apple. This settles the question of what causes these white spots or areas. The matter of preventing them is yet to be considered.

In most of our commercial varieties this thrips injury is of no consequence. It is inconspicuous at picking time on such varie-



Thrips Injury to Mature McIntosh Red

ties as Winesap, Newtown, Rome and usually Jonathan. In such cases, control measures are unnecessary. Where the McIntosh, Senator, York or Northern Spy is grown, however, it might sometimes be advisable to use preventive measures. The species of thrips causing this injury has not been determined. However, the damage is done during a comparatively short period, and the application of a standard thrips spray of miscible or distillate oil and nicotine sulphate at the time of the "pink" spray should materially reduce the injury.

Collar Rot

By Luke Powell, Horticulturist, Yakima, Washington

THE fruit grower little realizes the heavy loss he is sustaining year after year from the so-called collar rot. If the owner of the average ten-acre orchard was to lose three cows or horses per year, valued at \$100 each, he would soon realize that he must find the causes and remedies for the losses or quit raising cows and horses.

The average fruit grower does not realize that every time a good fruit tree dies it means a loss of at least \$100 to him. This is due to the fact that it takes the tree about a year or two to die and usually before one is dead several more have started and so the grower gets calloused to his losses. Nor does he further know that as the trees get older they are more susceptible to the disease, although they are increasing in value.

In reality there is no such diseases known as collar rot. But due to the fact that the trees are most usually affected below the surface first and die when the infection has about spread to all the roots and girdled the tree at the surface of the soil, it is commonly called collar rot.

We have here in the Yakima valley several different types of this root injury which, if not promptly checked, soon kills the tree.

On some slopes with good soil and splendid drainage we are losing trees during the summer or irrigation season.

In other localities the injury is done later on as the fall and early winter sets in, or it may be delayed until spring, depending on the factors that cause the trouble.

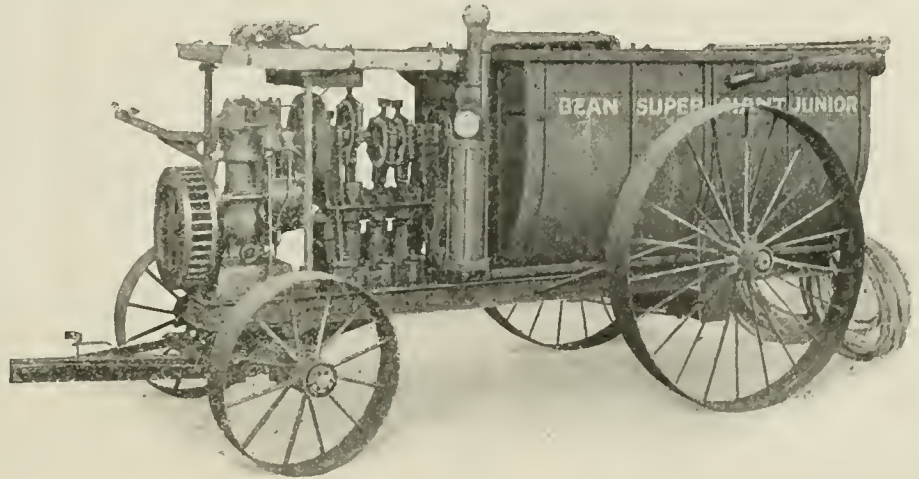
We have some few cases of real pear or fire blight attacking the roots and trunks of the trees. This is easy to control compared to the other cases.

There are three factors that enter into the control of this so-called collar rot.

First: The grower must fully realize the economical loss he is sustaining from year to year.

Second: That he is going to find out the factors that causes it in his orchard and how to prevent its further occurrence.

Third: That in the future he will plant only such nursery stock as is as near immune to these troubles as it is possible to grow.



14 Gallons a Minute at 300 lbs. Pressure

You growers of the Northwest appreciate the vital importance of speed in your spraying. You know that when it's time to spray EVERY HOUR COUNTS! This new outfit was developed to meet your demand for more power and larger capacity in a light-weight, easily handled rig that two horses can pull without trouble. The

Bean Super-Giant Junior

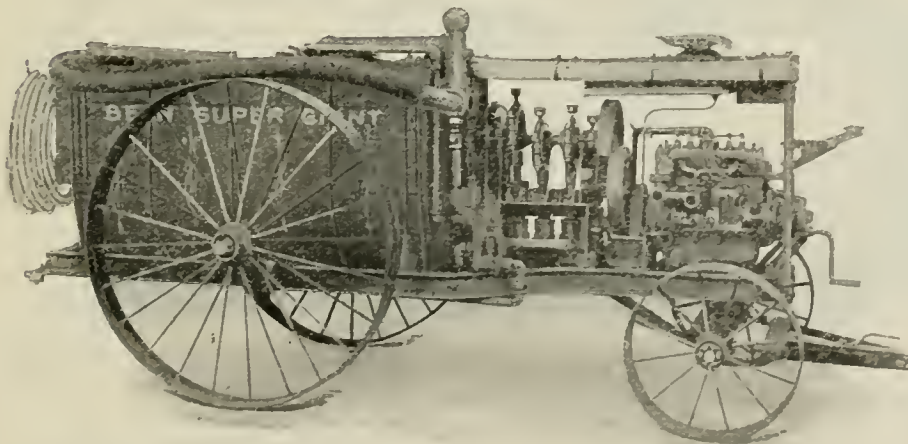
**Bean Spray
Pump Co.**

Originators of the first high
pressure spray pumps.

19 Hosmer Street
Lansing, Mich.

118 W. Julian Street
San Jose, Calif.

has a nozzle capacity of 14 gallons a minute at 300 lbs. pressure. This, together with the 300-gallon tank, enables you to cover a surprising lot of trees in a day and do thorough work as you go. You not only save time, labor, and money by reason of the increased capacity—but you get the spray onto the trees when it does the most good—and that means bigger crops, better fruit, and more profit.



Bean Super-Giant: Capacity, 16-25 Gallons-Minute

SEND THE COUPON for the new Bean Catalog, which illustrates and describes the entire Bean line for 1922, including the Bean Super-Giant Junior and the new Bean 6 H. P. engine, which is a big feature of the outfit, and a very decided improvement in sprayer engine construction.

19 Hosmer St., BEAN SPRAY PUMP CO.
118 W. Julian St., Lansing, Mich.
Mail to address nearest you.
Name
Street
Town
State
Kind of Fruit Grown
No. of Acres 30-50

The Care and Culture of Vineyards

By Daniel Prowant, a Successful Grower

WHILE grapes seem to prefer a rather high location, and one that will surface drain readily, they may be successfully grown on almost any soil that can be drained properly by means of tile. They do not require a soil as high in fertility as some of the other fruit crops, but they will repay good care. Cultivation must be frequent enough to keep out all weeds and grass, and to keep the soil loose enough to prevent the escape of moisture in dry weather. They are usually a fairly profitable crop, and in some sections of the country where the land is so broken as to make general farming difficult they are the most profitable crop that can be grown.

Our own vineyard is set in rows six feet wide, the vines six feet apart in the rows. Cedar fence posts are placed in the rows twenty feet apart, and wires are stretched for them to vine on. The wires should not be stapled to the posts, as the weight of the vines will pull out the staples, and make an unsatisfactory job. The best plan is to bore one-half inch holes entirely through the posts, and pass the wires through the holes. The end posts must either be securely braced or set in concrete to prevent the wires from sagging. Three wires for each row is sufficient, but they should be pretty heavy, as they may be broken when laden with fruit, and should be stretched as tight as possible. This method is quite satisfactory in every way except that it will only permit cultivating in one direction.

ANOTHER plan of growing that I have seen in use that will permit cultivating in both directions, is to set three small posts, preferably steel posts, in the form of a triangle, with the vine in the center. Three or four wires are stretched around this triangle to support the vine growth. The only objection to this plan is that the

grapes are a little more difficult to get at by the pickers.

With us grapes are not bothered to any extent by insect pests, but such fungus diseases as rust, rot and mildew are more or less common. This can be taken care of by spraying at regular intervals with some good fungicide. Bordeaux mixture is used with good results for this purpose, or a combined insecticide and fungicide may be used if there is need for it. Insecticides should not be used after the fruit has set, as almost all of them are poisonous to mankind as well as to insects.

Pruning the vines should take place once annually, and the work must be done while the vines are dormant. We prefer to do this while the weather is quite cold, as the vines often lose much sap if pruned when not frozen. There is more danger of the average grower not pruning enough than there is of pruning too much. All of last year's growth should be cut away except two buds on each branch of the vine, and not more than three or four branches allowed to remain. This looks like making a slaughter of the vineyard at the time, it is true, but as the grapes are always produced on new vine growth the fruit will be much larger if the roots are not compelled to support too large a growth of vines.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

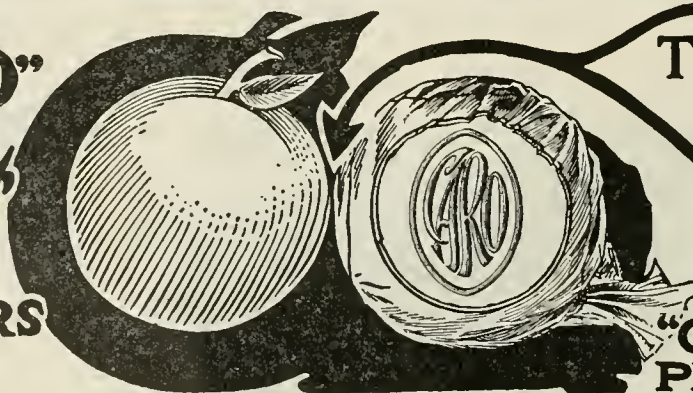
Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

"CARO"
fruit

WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Sometimes when the grapes set very heavily it will be necessary to thin out some of the bunches if the finest grapes are wanted. If too many are allowed to remain the grapes will all be small and of inferior quality. The best time to do this is when the grapes are a little less than half grown, and the worker will have to be governed largely by conditions and use his own judgment regarding how far to go with the thinning.

When the grapes are to be thinned or gathered a sharp knife or a small pair of shears should be used to cut off the bunches. They should not in any case be broken off as the vine is apt to be torn, and this does it more damage at this time than might be supposed. Grapes are usually marketed in one-half or one bushel baskets, and should be handled with care by the pickers and haulers to avoid crushing. If the grapes are to be shipped to a distant market it is better not to allow them to get too ripe, as they are apt to be badly crushed in transit, and reach the consumer in poor condition.

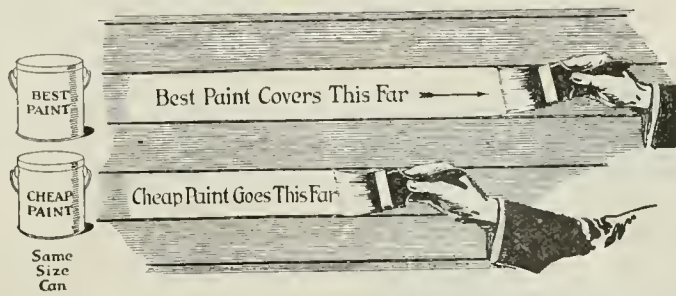
Preserving Sweet Cider

SWEET cider or grape juice can be preserved in a sweet condition indefinitely if the directions furnished by specialists in the Bureau of Plant Industry, United States Department of Agriculture, are carefully followed.

As rapidly as the juices are pressed from the fruit place them in clean vessels. Wooden barrels or tubs which have previously been thoroughly scalded will serve the purpose very well, although earthenware jars, if available, should be used. These are allowed to stand over night, or for not more than 12 to 14 hours, in the coolest location possible so that much of the solid matter suspended in the juice will settle to the bottom. Glass jars or bottles must be thoroughly sterilized to receive the juices, which are drained off without disturbing the sediment.

If fruit jars are used they should be fitted with sterilized caps and rubbers, and the cap tightened down as far as it can be turned. If bottles using crown caps are used, the bottles are capped as they are filled, using caps which have been sterilized. In case bottles closed with corks are used, set the previously sterilized corks in place in the bottles and tie them down loosely with a strong cord so that steam may escape. To relieve the pressure during sterilization the bottles should be filled only to the neck.

A WASH boiler or other convenient vessel can be prepared for a "water bath" by fitting it with a wooden rack on which the containers filled as above indicated with juice are placed. The bath is filled with cold water and the bottles or jars, if closed,



Paint Economy Isn't "Cost Per Gallon"

THERE'S one way only to save on paint. That way is to use the best of paint.

Some think of paint economy as "cost per gallon." That is wrong.

Cheap paint doesn't cover as much surface—you need *more* gallons.

Cheap paint is more difficult to spread, requires more labor, so the best paint costs you no more when you've put it on the house or barn than cheap paint does.

More than that, it lasts five or more years, if properly applied, while cheap paint, on the average, begins cracking in twelve months. Good paint is an *investment* that saves money by preventing deterioration.

"Cheap" paint is the only paint that really *costs*. Don't allow surfaces to rot. It costs less to paint them.

We've made paints for western use for 72 years. We use the best materials—pure PIONEER WHITE LEAD, pure linseed oil, zinc and color, but we mix them in scientifically exact proportions with long-time skill.

Our white-lead base must be fine enough to pass through a silk screen with 40,000 meshes to the square inch.

That means covering capacity and ease of spread. We super-purify the lead to make it "whiter," which means clearer-toned colors.

The finished product on the house or barn is an elastic, tough, protective coating.

We call these paints "Fuller's Specification Farm Paints" because they are the very best made for the purpose.



Fuller's SPECIFICATION Farm Paints

House Point - Barn & Roof Point
Wagon Point - Rubber Cement Floor Point

M'd. by W. P. Fuller & Co.

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and
PIONEER WHITE LEAD for 72 Years.

Established 1849

San Francisco
Branches in 16 cities in the West—Dealers everywhere

Also makers of All-Purpose Varnishes, Silkenwhite Enamel, Fifteen-for-Floors Varnish, Washable Wall Finish, Auto Enamel, Porch and Step Paint and PIONEER WHITE LEAD.

Free Information

Mail Coupon

Send coupon for free book, "Save the Surface," which tells of the vital importance of good paint. Also get our small booklet of Fuller's Specification Farm Paints.

Both books will help you in selecting the right paint for your needs. Mail coupon now.

Ask our Specification Department for free detailed advice on any question about painting.

W. P. Fuller & Co.

Dept. F 17, San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your small booklet of farm paints and varnishes.

Name.....

Address.....

City..... State.....

For all exterior jobs of painting it is advisable to obtain the services of a Master Painter

are inverted or laid on one side so as to wet the inside of the caps thoroughly with juice. If bottles closed with corks are used, the bottles must stand upright in the water, which should come up to the necks of the bottles.

The heating is then started. A thermometer is hung so that it will dip for half its length into the water, which is heated gradually until its temperature reaches 175 degrees F. Allow the bottles or jars to remain in the water for 30 minutes if quart or half-gallon jars are used, and from 40 to 45 minutes if gallon bottles are used. Then remove from the stove and immediately tighten down the caps of the jars, if jars are used. If corked bottles are used, drive the corks firmly into the necks; invert each bottle so as to wet the cork thoroughly with the hot juice; then complete the sealing by cutting the corks off smoothly and pouring hot paraffin over it.

Place the product in a dark, cool storage room. Watch it for a period of a week or more for the beginning of fermentation, which will be indicated by frothing at the surface of the liquid. If any bottles show signs of fermenting, return them to the wash boiler and repeat the process exactly as before, loosening the tops, of course, before heating begins, and closing down firmly again before the liquid is allowed to cool.

WHEN the juice is placed in storage the suspended solid matter will gradually settle out and sediment will accumulate in the bottom and on the sides of the jars. In the course of two or three months at ordinary temperatures, this settling will be completed and the liquid will be fairly clear. It may be used directly from the bottles or drawn off into clean bottles, which should be sterilized before they are filled and which should then be corked and pasteurized by heating to 170 degrees F. for the same length of time as in the first pasteurization. If rebottling is necessary or desirable the second heating should never reach the temperature to which the juice was first heated; otherwise, the clarification which is secured by settling and decanting into new containers will be defeated, as a second process of sedimentation will occur. If the temperature be kept 5 degrees below that reached at the first heating, this result will be avoided.

A reliable thermometer is a necessity for this work, as it is important that the juice be heated to 175 degrees F. in the first heating, in order to destroy the organisms which would otherwise cause fermentation. It is equally important that the juice should not be overheated, as this will give it a cooked taste which is decidedly unpleasant to many people.

A survey of the dried and canned fruit business in Scandinavian countries finds American canned and dried fruits easily in first place and enjoying continued popularity, reports the American agricultural trade commissioner at London.

Applying Oil Spray

By Leroy Childs, Entomologist, Hood River Experiment Station

THE oil spray is a difficult one to apply owing to the fact that all parts of the trees must be thoroughly covered if good control of the leaf roller is to be obtained. In order to get the best results there are a few points that growers should continually keep in mind while the spray is being applied. These are:

Apply the spray during warm settled weather as far as it is possible to do so.

The eggs of the leaf roller are deposited on the twigs and branches in all parts of the trees, for the most part on the upper sides of the limbs and twigs. On this account all parts of the trees must be thoroughly covered.

It is important to hit every egg mass. From 25 to 75 worms will hatch from every egg mass missed. Therefore, it is easy to understand that a few missed egg masses can result in a very wormy condition of the tree. Failure in thoroughness is the reason why a great many orchardists report poor leaf roller control.

If poor control occurred in portions of your orchard last year be sure and pick out the most favorable weather conditions this year to spray this section as many more eggs occur on the trees in such sections than where good control was obtained.

After the spray has dried on some of the sprayed trees examine them. If you find unsprayed limbs you can figure that you are doing a poor job. You can also figure that you will have plenty of leaf rollers if you do not do better work.

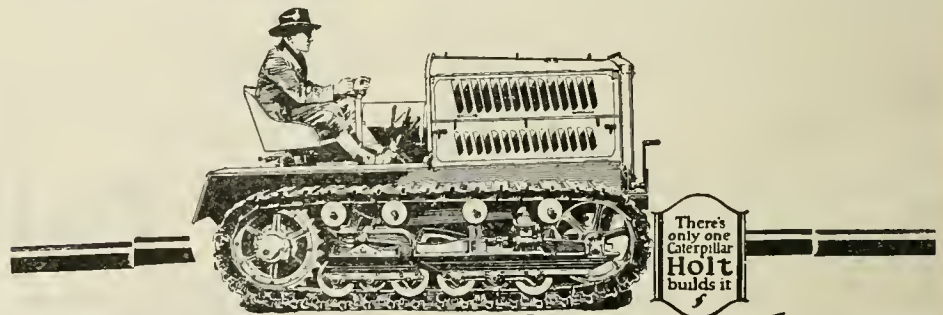
The following amount of diluted oil spray per tree has given excellent control during the past several years in a number of orchards under observation:

- Trees 11 years old, 4.1 gallons;
- Trees 12 years old, 4.5 gallons;
- Trees 13 years old, 5.6 gallons;
- Trees 14 years old, 7 gallons;
- Trees 15 years old, 7.2 gallons;
- Trees 17 years old, 8 gallons.

Check up your average usage per tree and if you find that you are under these figures it will pay you a big return to increase the amount of spray per tree.

FREIGHT RATE REDUCTIONS

MARKED reductions in freight rates on canned goods, dried fruits and vegetables, peas and beans in carload lots, shipped from Pacific Coast territory to eastern points, were made effective Monday, August 22. The rates affect shipments from Spokane, Walla Walla, Yakima and Coast points, to all eastern territory extending from St. Paul, Omaha and Denver to the Atlantic seaboard. On canned goods the basic rate is reduced from \$1.20½ a hundred pounds to \$1.05. On dried and evaporated fruits and vegetables the rate is cut from \$2.00 to \$1.45 on shipments in sacks or boxes and from 1.66½ to \$1.25 on goods shipped in glass or cans. On dry beans and peas the cut is from \$1.25½ to \$1.05.



Dependability
the
dominating feature
of "Caterpillar" Tractors
The HOLT

MANUFACTURING COMPANY

Stockton, California

Peoria, Illinois

Los Angeles, Cal.

Spokane, Wash.

San Francisco, Cal.

Entree of the Basket

(Continued from page 6)

inch to a full inch, depending on the commercial size. This variation is necessary to secure a tight pack. With a little study of sizes the packer is necessary to secure a tight pack. With a little study of sizes the packer will have no trouble in adopting one of the faces worked out in detail below, and will not have to patch a face by finishing with large or small apples. In arranging the apples the beginner will find that he can make great use of the minimum and the maximum longitudinal diameter of the size of the apple that he is working with. If the circle or ring lacks but half an inch, of being filled, or a fair-sized apple will not go in, it will usually be found that by changing several of the apples with a smaller or greater longitudinal diameter as the case may be, the space will be filled.

Each circle in the face of the basket should have apples in it as nearly as possible of uniform size of the commercial size that is being packed. Any perceptible size difference will detract from the general appearance.

Ring I. is the first ring put on. Start at the side of the basket so that the edge of the apple will not be more than a half inch above the edge of the basket. Succeeding apples should be placed very close together on the style of stem to calyx. If one apple is above the edge of the basket too far because of fruit being high below, select fruit that has a smaller transverse diameter or vice versa so that the result will be an even face. Then ring II. is put on in like fashion. Rings III. and IV. follow and sometimes with small commercial sizes it will be necessary to put one or two apples in the center which are spoken of as key apples.

As mentioned previously the height of the bulge is very important. The center will be higher than ring I. This is caused by the construction of the basket. Too high a bulge will cause unnecessary crushing of the fruit from the cover or by other baskets being placed on top. Too high a bulge will also interfere with the proper adjustment of the cover. An excessive bulge in the center will prevent the cover from fitting properly around the edge of the basket, which permits the fruit to protrude between the hoop of the cover and the top of the basket, thereby causing lid bruising.

It is not likely that it will prove profitable to ring face any fruit that is below 2 inches in diameter. A jumble pack with a smoothed off face will be best for small fruits.

While more time is required to ring pack a basket from the bottom than to jumble pack, a better pack can be secured with ring packing from the standpoint of even facing. It is easier to face a basket that is ring packed from the bottom than to face a basket that is jumble packed. The fruit in a ring packed basket is tighter than in a jum-

ble packed basket and will not settle as much in shipment.

THE experiments carried on in the ring facing of odd shaped varieties of fruit were conducted with York Imperials. In many instances the longitudinal diameter was less than the transverse diameter in this type of apple, which makes it more difficult to face the baskets as compared with fruit that is regular in shape and conformation. Due to the shape of this particular variety it was found that the apples could be ring packed more expeditiously than apples of other types. This holds true especially of sizes that are from two and one-half inches up. In ring packing the basket the apples in the rings throughout the basket should be placed stem to calyx.

The Yorks were found to pack very closely. The tightness of the face rings can be secured best with apples similar in size and conformation. The juxtaposition of these apples depends on the skill of the packer in arranging these varieties so they will fit snugly one against the other. If there are smaller apples of the commercial size that is being worked with than there are large apples in the size, then the smaller apples should be used to make the first ring, the second ring should be a little larger and the largest apples of the commercial size should be in the middle.

HEIGHT OF BULGE

THE height of the bulge is a very important feature in the packing of basket apples. Either too large or too small a bulge is unsatisfactory and will give the fruit of the facing an unattractive appearance. If the bulge is not sufficient the basket will arrive on the market with a slack pack. This will cause bruising and discoloration of the contents, and very materially reduce the sale value of the packages. It will also result in a disarrangement of fruit in the facing.

Too high a bulge will result in equally bad consequences. It will result in bruised

and cut fruit in the face of the basket. There will be opportunity for the face to slip as the space between cover hoop and basket edge will allow fruit to slip out.

(Continued on page 18)

SERVICE
IS OUR FIRST N-AIM



THE SIMPSON & DOELLER CO.
1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES AND PRICES

WE CAN FILL YOUR ORDER FOR STOCK APPLE, PEAR, CHERRY AND STRAWBERRY LABELS IN 24 HOURS.



Frost Protection

for your orchards

Don't let frost take away your year's income. Orchard heaters are frost insurance. Use them and have big crops at premium prices when others fail; get high prices for your crops.

Scheu Smokeless and Canco Heaters

have saved crops all over the United States. Temperatures of 15° successfully raised above danger point. "Outside temperature was 26°, with Scheu Heaters raised to 40°. Crop saved, 100%," says Ernest A. Tonk, apple grower of Cashmere, Washington.

Growers all over United States report similar success. More than a million now in use. Cost 36c up. Write for free 48 page book — "Frost Insurance." Resident agents wanted.

Orchard Heater Dept. 0
WHITING-MEAD COM'L. CO., LOS ANGELES



BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

W. H. WALTON.....Editor
JERROLD OWEN.....Associate Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

A. H. BILLINGSLEA.....
.....No. 1 Madison Avenue, New York
J. C. BILLINGSLEA.....
.....Advertising Bldg., Chicago
SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volek, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

The Railroad Situation

The railway executives of the country have recently resorted to an advertising campaign that they claim is necessary to educate the people of the country to the necessity for a pronounced raise in passenger and freight rates. To make a short cut in coming to the point this action has not been viewed with either toleration or complacency by the shipping public, more particularly the farmer—and when we say farmer we mean anyone who cultivates the soil whether for the production of fruit or other products. The farmer in asking and expecting more liberal terms in making it possible to market his wares is justified. In fact, he is justified by even the railroads who say that compared to other products those from the soil have taken a greater drop than in any other line of business. But—the railway executives point out that the prices of farm products in 1919, when they reached their peak, were 234 per cent higher than in 1913, and are now only 13 per cent higher than in the pre-war period of 1913.

On this basis, while admitting

that transportation rates on farm products are too high, the railway executives say that they are not so high, but that the farmer can do business on a profitable or at least a living basis. On the other hand it is claimed by the railway executives that the railroads at the present time cannot remain in existence on a lower scale of rates and earnings than at present. These rates, it is officially stated by the railroads were intended by the Interstate Commerce Commission to enable them on the average to earn an annual return of 6 per cent on a valuation of \$18,900,000,000. This valuation, which it has been claimed by many is too high, was not made, however, at the instigation of the railways, but by the Interstate Commerce Commission under a law, the passage of which was secured by Senators La Follette and which was considered fair, although the railroads opposed it.

The fact now remains that owing to their greatly increased operating cost the railways are far from making the earnings allowed them by the Interstate Commerce Commission and since they were returned from government ownership and placed under the present rates have incurred enormous losses. For these reasons the executives of the railways, while stating that a reduction in the present rates should not be indefinitely postponed, emphatically proclaim that a general reduction at the present time would be ruinous to the roads.

As a matter of fact the crux of the situation seems to be in the fact that while the railways recognize the plight of the farmer in regard to needing a change in rates, the railways cannot assist in changing this condition until the plight they are in themselves permits of it.

The most certain feature in regard to the situation is that while some commodities are so situated that they can be marketed at a price commensurate with the principle that they can stand all the traffic will bear, others can not. They must have a fair transportation

rate to survive. On the other hand it is a well known fact that when the railroads are prosperous the country is prosperous and that we should exert our influence in a fair and equitable manner to have the great arteries of the nation be made so.

Fire Prevention

The week devoted to the cause of fire prevention is assuming an important place in the national calendar devoted to civic affairs. Fire losses even under the most protective surroundings are often of a heart and purse rending nature. Money cannot in many cases replace or restore things that have been destroyed by the unquenchable flame.

In later years this has become more and more emphasized and while the protection by insurance of architecture in its many forms is more greatly resorted to at present and is made much more easily obtainable than formerly, building to prevent fires through the use of inflammable materials is being taken up to a much greater extent. The fruit of this observance or precaution in what may be called a "better material, better building" campaign, has been noted in many communities, as well as their more complete observance of the things that make fires more impossible. In other words, do not build of wood if concrete and stone will make your structure safer and more valuable. And it will make it safer and more valuable by the greater security it gives and its lessened insurance risk.

In America very little was done along this line until a few years ago when the National Fire Protection Association was organized at Boston. Since then Fire Protection Week has become a special event in every city and town in the country and has even been taken up by the schools. Fire Prevention Week commences October 9. Do something during this week to help reduce our \$1,000,000 annual fire loss.

Bees

Bees, those little indefatigable workers that may be said to be the only rival of the ant in our industrial insect life, like Shakespeare's description of man, "play many parts," as they hum through the sunny meadow or orchard sipping nectar here and there. To the beekeeper, generally speaking, this little gold banded or maybe black-bodied visitor to blossom and flower means little but pounds—pounds of honey. The buzzing of his diminutive wings likewise, mean little to the average fruit grower except—as he goes from blossom to blossom he instils in it life—the life of propagation; the life that brings fruit and shekels in the fall.

But a study of bees show that they mean more than this—that they have a civilization; that they have a well ordered industrial community and a perfectly appointed and operated factory. And last, but not least that they are a great help to man.

For years, used as the gatherer of honey they have been exploited for their store of this sweet by the bee-keeper, professional and otherwise. Of late years, they have been found to be the careful and successful orchardist's best friend, for they make trees whose blossoms are sterile bear, and fruit grow where none grew before.

SONG FOR NATIONAL APPLE WEEK

By JAMES HANDLY, Quincy, Ill.
Tune: Auld Lang Syne.

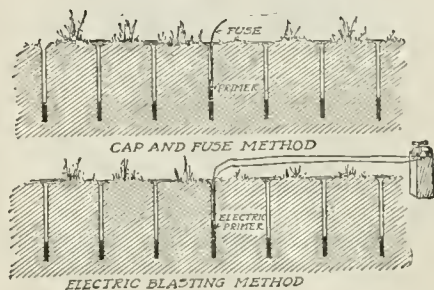
We come again on apple days,
To sing our songs once more,
And show our harvests of the fruit,
Now placed in autumn's store;
The beaming morning's light, in sparkling dews,
Has painted apples' rosy tints, in brightest hues.
And though we wander far away
From homes of early days,
Bright scenes of blossoming apple trees,
Will shine in songs we raise;
And when the ripening fruit, with twigs entwined,
Then dearest thoughts he brought to mind, for
Auld Lang Syne.

We meet with friends at apple feasts,
Partake best fruit that grows,
And see the flowers of blooming health,
In sweetness of the rose,
Then to the highest source, for blessings here
With joy we join the songs of praise, in thanks
sincere.

We'll not forget the orphan homes,
Nor those whose homes are bare,
For all who need in walks of life
Should have some watchful care;
To them we send some fruit for Auld Lang Syne,
And show some kindness yet, my dear, for Auld
Lang Syne.



"Propagated" Ditching



Ditching with Dynamite Now Possible the Year Round

FOR speed, simplicity and economy, ditching with dynamite by the "propagated" method is in a class by itself. All that is needed is the dynamite, caps and fuse and a crow-bar. The detonation of one cartridge sets off the whole line of dynamite.

Up to the present time this method could be used only during the warmer months, as the old "straight" dynamite was not wholly effective at temperatures below 50 degrees F.

With the NEW Low Freezing



NITROGLYCERIN DYNAMITE

"propagated" ditching can be successfully carried on in wet soil in any temperature. It is practically freeze-proof. Ditches have been shot perfectly with this new explosive at 14 degrees below zero. Drainage projects can now be planned and completed regardless of weather conditions.

See your local hardware or general store merchant. Write for 100-page "Farmers' Handbook of Explosives" for complete instructions for ditching, land-clearing and tree-planting with explosives.

E. I. DU PONT DE NEMOURS & CO., Inc.

Portland, Ore., Seattle, Wash., Spokane, Wash.

Orchard for Sale!

23½ Acres in beautiful White Salmon Valley, Washington, 3 miles from town. 13 Acres in Yellow Newtowns and Spitzenbergs, 12 and 14 years old, with proper pollenizers. Fine home orchard of 40 trees—every variety of fruit which will grow in the locality. Fine spring just east of the place, with flow enough to supply several places. Price \$4,000.00—reasonable terms for quick sale.

Address C. I. M. care BETTER FRUIT

My Experience in Filbert Culture

By Nat M. Norelius of The Western Walnut Growers' Association

MARCH 6, 1894 I planted my first half dozen filbert trees, consisting of English varieties. Ten years later, April 7, 1904, I planted 100 filbert trees of the Barcelona and Du Chilly varieties.

The following year, October 28, I added 60 trees to my filbert grove, making in all about 165 filbert trees divided as follows: One hundred and five Du Chilly, forty-eight Barcelona, four Daviana, three Cosford, four English, and one Clarke.

These filbert trees I planted in rows ten feet apart and alternating twenty feet apart in the row, thus making the actual minimum distance apart of the trees 13 feet, covering about seven-eighths of an acre of ground.

My soil is clay loam, and the trees have grown thriftily in this soil from the beginning. They have had but one setback, caused by sun-scald. When the trees were three years old, the temperature running up to 105 degrees caused injury to the bark on the south side of the trunk, thus stunting the growth of a number of trees. Those trees that were stunted in growth I cut away and permitted several sprouts to take the place of the one—the stunted trees thus forming a bushy shrub. These I have found to bear equally as well as the one-stemmed trees.

The filbert tree is almost free from insect pests, such as infest our fruit trees, and therefore seldom needs spraying except for moss and other fungus growth. Spraying for this purpose will improve the condition and appearance of the trees.

Since the trees came to bearing age they have borne crops every season, but in varying amounts. Of the varieties I have I consider the Barcelona by far the heaviest bearer of crops. We now know that this is due to the need of outside aid in its pollination. With the proper pollinizer, we have found, that the Du Chilly is able to produce crops equal to the Barcelona. Of the mixed varieties, I have found the Cosford to be the largest and best looking nut, of good quality and a fair producer.

As to the quantity of the crops, I have no marvelous records to give you, but quote you the amounts of the last three year's crops; The 1918 crop total was 540 pounds, 187 pounds Du Chilly, 312 pounds Barcelona and 40 pounds mixed, which brought me from the crop \$144.00. The 1919 crop total was 500 pounds, bringing me \$155.00. The 1920 crop total was 1061 pounds, 508 pounds Du Chilly, 410 pounds Barcelona, 143 pounds mixed nuts.

I will now in closing briefly summarize what I have learned from my experience in filbert culture; Filbert trees thrive and bear crops in a variety of soils, from a heavy clay to a gravelly loam, but in any soil will respond to good care and proper fertilizing.

From 18 to 20 feet apart each way. I

think is the proper distance to plant filbert trees. As to varieties, I would depend mainly on Barcelona. But, if I could get the proper pollinizers, I would plant one-half each of Barcelona and Du Chilly, selecting good sized and well rooted trees for planting.

I have found that a filbert grove requires less work and expense to keep in good condition than a fruit orchard and requires less labor and expense to harvest the crop.

Those interested in raising chickens will find a filbert grove an ideal run for their flock.

Entree of the Basket

(Continued from page 15)

It will make difficult the proper adjustment of the cover.

The proper bulge should be of that height which will cause the handle slat of the cover to fit snugly against the wire handles and in a concave position when these handles are bent down.

The use of cover pads has long been a custom in the packing of apples in containers. They are used to prevent bruising and to add attractiveness to the pack.



Come on!
Fill your makin's papers with P. A.

GREATEST sport you know to pull out your makin's papers and some Prince Albert and roll up a cigarette! That's because P. A. is so delightfully good and refreshing in a cigarette—just like it is in a jimmy pipe! You never seem to get your fill—P. A.'s so joy'usly friendly and appetizing.

Prince Albert will be a revelation to your taste! No other tobacco at any price is in its class! And, it rolls up easily because it's crimp cut and it stays put. It's the best bet you ever laid that you'll like P. A. better than any cigarette you ever rolled!

And, if you have a pipe hankering, know what Prince Albert can do for you! P. A. can't bite or parch. Both are cut out by our exclusive patented process.

Prince Albert is sold in tippy red bags, tidy red tins, handsome pound and half pound tin humidors and in the pound crystal glass humidor with sponge moistener top.



PRINCE
the national joy smoke
ALBERT

Copyright 1921 by R. J. Reynolds Tobacco Co. Winston-Salem, N. C.

They should always be used in packing baskets where an attempt is being made to put up a high class pack that is of good quality and appearance.

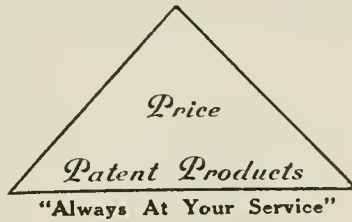
THE proper fastening of the cover cannot be too strongly emphasized. The failure to properly fasten the cover will result in the cover coming off and the contents being spilled.

To properly fasten the cover for carlot shipments by freight the wire handles should be bent inward and down on the hand slat of the cover. It is not safe to ship in carlots and expect good results unless the covers are so fixed by the handles being bent down. For express and L. C. L. shipments the wire handles should be bent down and inward as in making carlot freight shipments and in addition side hooks should be used as shown in Figure 2. The wire hooks should be driven under the top outside hoop and bent down over the top of the cover hoop with pliers.

There are three general styles of covers in use, namely: the Standard, The Hoop and the Star Hoop Cover. Of these three styles the Standard cover has proven to be the poorest and should never be used with fruits. Experience has shown that the Standard cover is best suited for spinach, kale and other leaf vegetables.

The Hoop cover is not as well liked for fruit shipments as the star hoop cover, due to the fact that the construction of this cover does not give the strength or protection that is needed for some fruits. It is a good cover and widely used, but for shipments that receive many handlings and that travel long distances the Star Hoop Cover is to be preferred. The Star Hoop Cover is very strong and offers maximum protection to the contents and greatest strength where it is most required, that is in the center, and is much preferred to any other style of cover for the shipment of heavy fruit in baskets.

Work in the plants owned by the Graves Canning Company with headquarters at Brownsville was recently resumed after a short shutdown. The plants of the company which are located at Woodburn, Sherwood and Sheridan, are now all in operation.



Growers' and Packers' Equipment

We Manufacture:

- LADDERS
- BOX PRESSES
- PACKING CHAIRS
- BOX-MAKING BENCHES and
- AUTOMATIC ELEVATORS all
- GRAVITY & POWER CONVEYOR kinds
- POTATO GRADERS AND SIZERS of
- PRICE FRUIT SORTERS AND SIZERS Special
- NELSON FRUIT SORTERS AND SIZERS Equipment

PRICE "PRICE PRODUCTS"

Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse.

Illustrated Booklets and Price List on Request

Fruit Appliance Company

Successors to

Price Manufacturing Company, Inc.

YAKIMA, WASHINGTON

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester
 SIMONS, JACOBS & CO., Glasgow GARCIA, JACOBS & CO., London
 SIMONS (Southampton) LIMITED, Southampton
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.
 12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Conserving the Moisture of the Soil

NEXT to temperature, moisture is probably the controlling factor in the growth of plants. The importance of an adequate supply of moisture is most strikingly demonstrated in regions of deficient rainfall where irrigation is necessary for the growth of the crops (arid regions), but it is no less important in regions where the rainfall is usually considered sufficient for the needs of crops (humid regions). Not only must there be a sufficient supply of moisture, but it must be properly distributed throughout the growing season. It is well known that crops may be injured in a season that shows a high total rainfall, because there is deficient rain just at the stage where the plant needs it most.

Under all circumstances, therefore, it should be the farmer's aim to conserve the moisture in the soil in the arid regions to reduce as much as possible the labor and expense of irrigation, and in humid regions to protect crops against droughts. Various means may be employed for the purpose of conserving and economizing the moisture supply of soils.

Subsoiling is one of the most important of these means. Several of the stations have made careful studies of the influence of subsoiling on soil moisture. The Wisconsin station describes this influence substantially as follows: Subsoiling (1) increases the storage capacity of the soil for moisture, and (2) increases the rate at which water will sink into the soil, but (3) decreases the rate at which it may be brought back to the surface. Subsoiling also increases the amount of moisture available to crops, since plants are capable of utilizing a larger proportion of the moisture present in loose and coarse grained soils than of those in fine grained and compact soils.

As regards the best methods of subsoiling, a report of the Wisconsin station states:

"Subsoiling to be most effective should be done in such a way as to leave the soil loose, much as the stubble plow leaves it. To accomplish this much will depend upon the character of the tool and more upon the condition of the soil when the work is done. If the soil is so wet as to be plastic when the plowing is done, then the effect of the subsoil plow will be to wedge the portion of the soil which is heavily pressed into an even more compact and close texture than before, and thus develop a condition, the opposite of that sought. To simply form a long groove or channel in the subsoil by wedging the dirt aside gives little aid in the direction sought. Such work then, if done at all, should be done itself when the subsoil itself is dry enough, and this is most likely to occur in the fall after the crop of the season has withdrawn the moisture from it. Subsoiling late, too, leaves no time for the soil to lose its open texture before the rain to be stored reaches it."

In humid regions, as a recent bulletin of the California station points out, the soil

as a rule is underlaid at a comparatively short distance below the surface by a subsoil which the roots of the plant penetrate with difficulty and from which they can draw little nourishment. The roots, therefore, spread out near the surface, and the plants require frequent irrigation or rains to sustain life. A suspension of either rain or irrigation for ten days or two weeks under these conditions usually results in injury to the plant. Under such conditions subsoiling encourages deep rooting, and thus enlarges the stock of water as well as the plant food at the command of the plant. In many parts of the regions of deficient rainfall as in southern California, plants (especially fruit trees) are capable of withstanding months of drought. This is claimed to be due to the fact that "in arid regions, as a rule, subsoils in the eastern sense do not exist; the soil is readily penetrable to great depths."

This can be done in humid regions, to some extent at least, by thorough preparation and tillage of the soil and in the case of fruit trees, by guarding against excessive surface fertilization. In arid regions frequent irrigation, it is claimed, encourages shallow rooting.

To prevent loss of water from the soil by evaporation it is necessary to check the rise of water by capillarity to the surface of the soil. As already noted, this is accomplished

to some extent by subsoiling, but in order that the work partly accomplished by the subsoiling may be completed and finished, the surface of the soil must be kept covered by a mulch of loose, well-tilled soil by means of frequent tillage. Some experi-

A Banking Service for the Horticulturist

A complete banking service is offered you through our various departments.

Our officers welcome the opportunity of advising you how best to use these departments. Or a little booklet outlining the functions of each department may be had from the tellers upon request.

The First National Bank OF PORTLAND, OREGON

The first national bank west of the Rocky Mountains

MYERS SELF-OILING POWER PUMPS

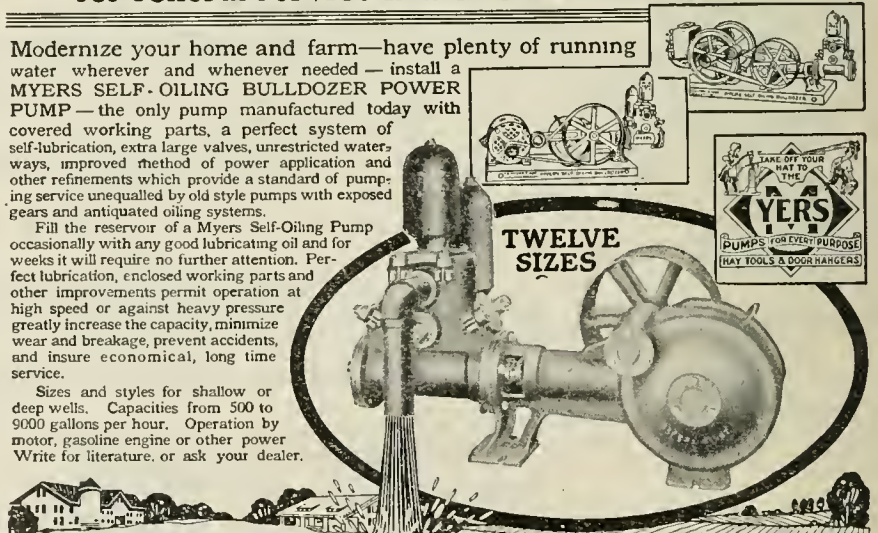
For General Service in the Home or on the Farm

Modernize your home and farm—have plenty of running

water wherever and whenever needed—install a MYERS SELF-OILING BULLDOZER POWER PUMP—the only pump manufactured today with covered working parts, a perfect system of self-lubrication, extra large valves, unrestricted waterways, improved method of power application and other refinements which provide a standard of pumping service unequalled by old style pumps with exposed gears and antiquated oiling systems.

Fill the reservoir of a Myers Self-Oiling Pump occasionally with any good lubricating oil and for weeks it will require no further attention. Perfect lubrication, enclosed working parts and other improvements permit operation at high speed or against heavy pressure greatly increase the capacity, minimize wear and breakage, prevent accidents, and insure economical, long time service.

Sizes and styles for shallow or deep wells. Capacities from 500 to 9000 gallons per hour. Operation by motor, gasoline engine or other power. Write for literature, or ask your dealer.



THE F. E. MYERS & BRO. CO. NO 135 ORANGE ST.
ASHLAND OHIO.
ASHLAND PUMP AND HAY TOOL WORKS

Pacific Northwest
Distributors

Mitchell
LEWIS & STAYER CO.

Spokane, Wash.
Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

ments of the Kansas station afford an illustration of the effectiveness of this means of conserving soil moisture.

One of the station fields which contained in round numbers 26 per cent of water in the first foot of soil, had one portion plowed, another disk harrowed, and a portion left untreated. The ensuing dry weather in the course of four weeks, notwithstanding several light rains, reduced the moisture of the untreated part to 15 per cent and that of the disked land to 18 per cent, the plowed ground containing 21 per cent. The last two were in excellent condition for seeding, while the first would plow up lumpy and unsatisfactory.

In the experiments at the Kansas station plowing proved as effective as any form of tillage tested. If time does not permit plowing, the speedy work of the disk harrow compares favorably in efficiency. In either case, if rain sufficient to start the weeds, follows, kill them with a harrow. This will at the same time break up any crust and preserve the soil mulch.

Whether the best results in preventing loss of moisture from the soil in humid regions will be obtained by subsoiling, shallow cultivation, or deep cultivation will depend very largely upon the character of the soil and subsoil. The Kansas station found no essential difference in the moisture content at the different depths of soil that had been prepared in the spring by the shallow plowing, by deep plowing and by subsoiling. In experiments at the North Dakota station on different methods of preparing soil and tillage for wheat the largest yield was obtained from land subsoiled eight inches below a six-inch furrow. A surface mulch of well tilled soil three or four inches thick is usually considered sufficient to afford effective protection against evaporation in humid regions. In regions of deficient rainfall, however, twice this depth is considered necessary.

In humid regions there is danger of serious loss of nitrates in subjecting bare plowed land to the long continued leaching action of abundant rains, as is done in summer fallowing and fall plowing; nevertheless, the Kansas station has found that the plowing of stubble as soon as possible after the removal of the previous crop, with frequent stirring of the soil, as described above, "not only insures a perfect seed bed for wheat in respect to moisture, but the soil has time to settle to the firm condition so advantageous to wheat, and the bareness, warmth and moisture are most favorable to the formation of nitrates from organic matter." In regions of deficient rainfall loss by leaching need not be feared. Under such conditions both summer fallowing and fall plowing may prove of great value in conserving moisture.

Fall plowing wherever the land is not naturally adequately absorbent, and is not thereby rendered liable to washing away, is a very effectual mode of utilization of the winter's moisture to the utmost, so as to bring about the junction of the season's

moisture with that of the previous season, which is generally considered as being a condition precedent for crop production in dry years. The same, of course, holds true of winter irrigation, the frequent omission of which in presence of plentiful water supply at that season is a prolific cause of avoidable crop failures. Moistening the ground to a considerable depth by winter irrigation is a very effective mode of promoting deep rooting, and will thus stand in lieu of later irrigations, which, being more scant, tend to keep the roots near the surface.

Moisture escapes from soils bearing crops much more rapidly than from bare soils. This fact has been very fairly and clearly demonstrated by investigations by the Iowa, Kansas, Wisconsin and other stations. These investigations show that sod land and soil bearing different crops always maintain less moisture than uncultivated soil of the same character. It is undoubtedly true that the injurious effect of weeds is due fully as much to the moisture which they withdraw from the soil as to the plant food which they consume. The poor growth of crops near hedgerows and woods is due largely to withdrawal from the soil of moisture required for the proper growth of the crops. It is a well known fact that the culture of crops in the orchards may prove injurious to fruit trees, especially in the dry seasons. This is due mainly to the

withdrawal of moisture needed by the trees. The danger from this source is especially great if the fruit trees are very shallow rooted.

**TREAT YOUR SOIL WITH
Toro Brand Agricultural
Sulphur**



It will increase your crop in some instances up to 500 per cent, prevent wire worms, eel-worms or nematodes, smutty grain and potato scab. For Lime-Sulphur Solution use **DIAMOND "S" BRAND REFINED FLOUR SULPHUR**. For dry dusting use **ANCHOR BRAND VELVET FLOWERS OF SULPHUR**. Sold by leading dealers.

For rodent control use **CARBON BISULPHIDE**. Write for circulars 6, 7 and 8, prices and samples.

SAN FRANCISCO SULPHUR CO.
624 California Street
San Francisco, California

*Apples, Pears, Peaches
Potatoes, Onions*

and all kinds of Fruit and
Produce Bought for Cash..

Address us as to what you
have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.



F.C. Stettler Mfg Co.
Portland - Oregon

Lithographers
Color Printers
Labels
Cartons
Folding Boxes
Cut Outs
Display Cards
Special Advertising
Stiff Boxes Plain and Fancy

Northwest Notes From Here and There

OREGON

SIXTY carloads of apples will be the output from Wasco county orchards this season, according to J. H. Fraser, manager of the Oregon Growers' Co-operative Association in that district. The season for small fruits for which The Dalles country is noted has closed successfully, most of the product being marketed in the Northwest. Two cars of prunes which were sent to London brought \$80 and \$85 per ton, while nine cars of similar quality, which were marketed in New York, brought \$59 per ton. The peach crop, which was marketed from The Dalles this year totalled about 15 cars.

▲ ▲ ▲

IN ESTIMATING the fruit shipments that would be made from the Medford district this year, Mark Montgomery, local agent of the Southern Pacific Company, says that the railroad has handled over 600 cars of pears and expects to ship out 1200 more cars of fruit before the season ends. In 1920 the total shipment of fruit was 1050 cars.

▲ ▲ ▲

Clifford C. Ross, manager of The Dalles plant of The Kings Dehydrated Products Company, who was a visitor in Hood River recently, stated that the Kings Company expects to dehydrate 7,000 tons of apples this year. The company has recently finished dehydrating 675 tons of prunes and 1000 tons of loganberries.

▲ ▲ ▲

ACCORDING to estimates recently made public at Roseburg the prune crop of Douglas county will this year be more than one-third of the total prune crop of the Pacific Northwest. As the estimates of the prune crop in the Northwest vary from 22,000,000 to 27,000,000 pounds and the crop in Douglas county is said to be approximately 9,000,000 pounds, it can be seen that the one-third estimate hits the mark pretty closely.

APPLE buyers in the Willamette valley are reported numerous this year and the opportunity to move the crop there is said to be the best in several years. A large part of the apple tonnage in the Willamette valley will be moved this year through the Oregon Growers' Association.

▲ ▲ ▲

THE demand for the early apple crop at Hood River, consisting largely of Kings and Gravensteins, was in excess of the supply at good prices. The movement of Bartletts handled by the association totalled over 22 cars, while the shipment of d'Anjous will be over 75 cars.

▲ ▲ ▲

THE first car of the Hood River valley's estimated apple tonnage of 2,250 cars for this year was shipped a few days ago by the Hood River Fruit Company. The shipment was a car of Gravensteins which was routed to Chicago.

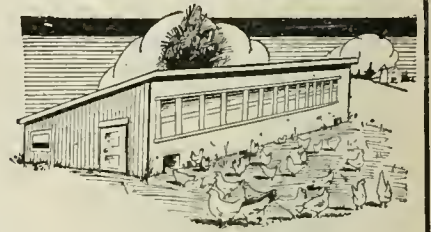
▲ ▲ ▲

A REPORT from the walnut growers of the state is to the effect that the industry is growing so rapidly that it is becoming necessary to develop new markets and establish grades. Fifty prominent Oregon growers who recently attended a conference at Salem under the auspices of the Oregon Growers' Co-operative Association decided that walnuts will be sold this year under the Mistland brand as Jumbo grafted, and as No. 1 and No. 2 grades. In addition to a bumper crop from the older orchards this year a large acreage of new stock is coming into bearing.

▲ ▲ ▲

A VERY light prune crop and a far below normal apple crop is the prediction for the Sheridan district this year. About 20 cars of apples is the number placed as the quantity the Growers' Association will handle. Prunes started to come in about the middle of September, but it was only necessary to use part of the dryer, which is the second largest in the state to handle the crop.

ONE of the large prune deals of the season that has attracted a good deal of attention was the sale by W. F. Drager of Salem of 1,000,000 pounds of this year's crop belonging to independent growers at Roseburg to Rosenberg Brothers of San Francisco. The sale was on a basis of 9½ cents for 30-35s.



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c

A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00

This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

ORCHARDISTS FERTILIZE CORRECTLY

The MARINE PRODUCTS WAY—a "balanced ration" plant food for fruit, leaf and tree growth. Use

Clarke's Wenatchee Orchard Dressing

Analysis:

Nitrogen, 6 per cent Phosphoric Acid, 10 per cent,
Potash, 4 per cent

All organic, containing animal material, such as Blood, Bone, Fish and Kelp. Develops keeping qualities in the fruit, strong wood to bear it, large

leaves to digest the plant food, and increases size and grade of fruit.

WARNING

If you are one of the orchardists who has been advised to use nitrate of soda, or sulphate of soda, or sulphate of ammonia in addition to growing legumes, and if as a result, your fruit did not keep, and you get too much wood growth, or a poor color on the fruit, use

Harris Hood River Special

Analysis:

Nitrogen, 1 per cent Phosphoric Acid 8 per cent
Potash, 10 per cent

Use this for one year. It will help correct the damage and bring back keeping qualities and will help mature the wood growth properly against the cold dormant season.

Secure Reduced Prices of Your Dealer, or Write

Marine Products Co.

TACOMA, WASHINGTON

THE low price of Loganberries and the inability of the canneries of many districts to handle the first part of the crop because of a late start, stimulated drying this year. High price of the berries for the past few years has made them prohibitive for drying and this year's dehydrated berries will go into a bear market. The Oregon Co-operative Association dried more than 50 tons of Logans at Sheridan alone. They are being packed in 8-ounce packages similar to those in which raisins are sold and also in 50 pound boxes. A large part of the dried berries, which are in reality a small proportion of the total crop, have already been disposed of.

WASHINGTON

THE winter apple shipping season started at Wenatchee September 8, when the first car of King Davids was dispatched by the American Fruit Growers, Inc., to New York. Many cars of Winter Bananas have been forwarded from the district, but the King David is usually regarded as the variety that marks the real opening of the season. Carloads of Jonathans will follow immediately and within a short time the first solid train load of apples will go east from Wenatchee.

AT a gathering of representative cranberry growers at Long Beach, W. E. Schimpf, sales manager of the Pacific Cranberry Exchange, predicted a ready sale for Pacific Coast cranberries this fall, owing to short Eastern crop. This, he said, was on the condition that the cranberries are graded and packed right.

The meeting recommended to the state horticulturist that he establish and enforce the following rules: That the standard grade be berries which will pass over a 7-16 inch screen; that the fancy grade consist of berries which will pass over a 5-8-inch screen; that the berries be of uniform color; that they be solid pack, conform to labels as to variety and the date packed be on the box, and that all berries visibly affected by fungus, worms, frost or imperfect in any way be culled out and that there be a tolerance of culls of only 2 per cent.

DR. R. H. Wells of Yakima, reported receiving \$20,451 from his 14-acre peach orchard. Dh. Wells has had the same foreman on his farm for four years.

IRRIGATION at Hunters, 75 miles northwest of Spokane, has produced a crop of 75,000 to 100,000 boxes of commercial apples in the orchard of the Hunters Land Company, according to J. M. Glasgow of Hunters, a Spokane visitor. The Hunters Land Company's orchard, made up of Jonathan, Winesap and Newtown apples, is the pride of the district. State inspectors hold it up as an example to orchardists. The 1400 trees on 275 acres are now in their third year. The crop will be marketed direct.

Apples escaped all frost damage in the Spokane district during the cold snap about September 18, according to C. J. Webb, assistant manager of the Spokane Fruit Growers' Company. The only effect of the early freeze, he believes, will be to hasten the maturity of the apples, bringing along the color more rapidly. "The apple picking season will be general in the Spokane district about September 25," said Mr. Webb. "We are picking some Winter Bananas in several sections now, but the tonnage will not be great. Picking of Wageners and Jonathans will begin in about two weeks. Our survey of frost damage shows that considerable loss will result to the growers through the

nipping of tomatoes and cantaloupes and the harm done to the fodder crops, corn and sunflowers grown for ensilage for winter feed. There was a big prospective tomato tonnage and it is almost completely destroyed. Cantaloupes are not such a serious item. The big Northwestern apple crop this year makes the possibility of car shortage serious. The railroads already are storing hundreds of cars in the Wenatchee and Yakima districts ready for the first movement of the fruit. The Northwest has more storage than before, but the total space is but a small percentage—possibly 20 to 25 per cent—of the anticipated tonnage. Wenatchee alone will have 15,000 cars of apples and Yakima, 11,000 and nearly all ordinarily will be moved out by the first of the year."

GROWERS and shippers of the Spokane valley met at Opportunity recently and agreed on maximum figures for the wage scale to be effective this season in orchards and packing houses. These show a slight reduction from 1920. The following scale was agreed upon for packing apples:

Fruit sorted and sized, per box, 4½ and 5 cents; sorted, but not sized, per box, 5½ and 6½ cents; clean, but neither sorted nor sized, per box, 7½ and 8 cents.

Face and fill pack, where one tier faced, per box, 4 cents; face and fill, two tiers, faced, 5 cents.

Packing apples containing many culls, price according to labor involved.

Sorters, maximum, per hour, 35 cents; truckers, laborers, etc., per hour, 30 cents; box ladders, who mail and stamp boxes, per box, 1 cent; minimum wage per day, \$5; picking and orchard work, per hour, 30 cents; foreman of sorting crews, trucking crews, car loaders, per day, \$4 to \$5. Good packers can make \$7 or \$8 a day at the figures agreed upon. No shortage of orchard and packing house labor is anticipated this season.

THE apple crop in the Northwest, including Washington, Oregon and Idaho, this year will be one of the largest, if not the largest, in the history of the district, according to J. S. Robinson, sales manager of the Earl Fruit company. He estimates the crop at about 30,000,000 boxes, valued at \$50,000,000 to \$60,000,000. "While the crop for the whole Northwest is large this year the yield in Spokane valley is somewhat short," said Mr. Robinson. "The Spokane valley crop will run about 1,130,000 boxes. The apples in the Northwest are high in quality this year. Picking has already begun at Yakima and Kennewick on Jonathans and Winter Bananas. Picking started in the Spokane valley the end of September on Wageners first and then on the other kinds. The Palouse corporation crop will be around 150,000 boxes, as compared with 100,000 last year, an increase of 50 per cent. The crop in the Arcadia district is good and will be about 250,000 boxes. The average value of the Arcadia apples will be \$1.50 a box. While the crop in the Northwest is large this year it is not much larger than the one last year, which was exceptionally good. Most of the apples will be shipped to Eastern points and some will be exported. The decrease in freight rates from \$1.62½ per 100 pounds to \$1.50 per 100 will not make much difference in the price of apples."

IDAHO

CHARLES G. ANDRUS, state horticultural inspector for the central Idaho district, has been transferred to the Payette field and the duties inspector in the central Idaho district will be

taken over by Bert F. Savage, director of agriculture for north Idaho. In taking over the inspection duties, Mr. Savage has resigned his duties with the Northwest Live Stock Association and the Lewiston-Clarkson tri-state fair organization and the offices of these organizations have been removed from the Thiessen building to the Commercial Club quarters in the Bunnell block.

While serving with the fair organization Mr. Savage obtained the county exhibits from Lewis and Kootenai counties in Idaho and Walla Walla county, Wash., and directed much of the fall fair advertising in the outside districts.

SOUTHERN IDAHO has a fine crop of Italian prunes and picking has started. The crop is expected to run about 1200 cars.

Schmidt
LITHO
CO

STABILITY

Our home—a justified physical representation of the business which it houses

LABELS - CARTONS - ADVERTISING SERVICE

SCHMIDT LITHOGRAPH CO

SEATTLE - LOS ANGELES - FRESNO
PORTLAND - SACRAMENTO - HONOLULU
- MANILA -
SAN FRANCISCO

<p>Musical Merchandise</p> <p>Write Us</p>	<p>WE SAVE YOU MONEY!</p> <p>W. Martius Music House, Inc.</p> <p>1009 First Avenue, Seattle, Washington</p> <p>Everything Known in Music</p>	<p>SHEET MUSIC</p> <p>Write Us</p>
--	---	------------------------------------

AT a recent meeting of Coeur d'Alene valley apple growers, 35 miles east of Spokane, R. L. Michael, apple buyer from Chicago, offered to buy the entire crop of every member of the association, pay 25 cents a box in advance and furnish boxes, the remainder to be paid when the apples are loaded on cars. He quoted the following prices: Jonathans, \$1.50; Wagners, \$1.30; Rome Beauties, \$1.10, and Delicious, \$1.75 to \$2.25.

What They Are Doing in California

GROWERS in the state of California will hereafter can their fresh figs themselves. Starting this season a large tonnage of fruit in the form of canned figs, preserved figs and fig jam will be placed on the market by the California Peach and Fig Growers, a co-operative marketing association of over 8,000 members.

The move marks the cutting away from the independent canning interests and the growers' organization will not only pack their products, but will market them as well.

In order to handle the growing tonnage of figs in California, a large proportion each year will be diverted to canned products and the balance dried as has been the case heretofore.

The association has erected two of the most modern canning plants on the Pacific Coast, as finely equipped as any in the country and the operations have already been started.

The California Peach & Fig Growers is the first of the big growers' organizations on the Pacific Coast to erect and operate canneries for their members on a large scale. The departure represents an investment of over \$100,000 and the two plants now in operation are located at strategic points in the California fig belt, so that the cost of deliveries is so equalized that every section of the belt is adequately served.

The operation is being watched with interest by various associations and if successful will probably sound the knell of big independent canneries depending on grower organizations for their fruit.

The association plans to put out the largest variety of fig products ever offered and an experimental department has been working to perfect a number of by-products from the fig industry.

By doing their own canning, the association believes that violent fluctuations in price that have characterized the fresh fig sales and the scarcity of a growing demand in the United States for high class fig products will be eliminated.

THE California Prune and Apricot Growers' Association, the reorganized California Prune and Apricot Growers, Inc., which represents more than 82 per cent of the prune acreage and 75 per cent of the apricot acreage of the state, officially came into existence Wednesday when the first meeting of its voting board was held here.

The thirty-nine members of the voting board, chosen by popular election last June, elected fourteen directors for the new association and directed them to proceed with the incorporation of the association.

The new directors are W. A. Yerxa, Princeton; Lloyd H. Wilbur, Yuba City; Henry Wheatley, Napa; Mark L. MacDonald, Santa Rosa; Geo. C. Alexander, Healdsburg; H. G. Coykendall, Cupertino; T. S. Montgomery, San Jose; A. Kammerer, San Jose; J. O. Hayes, San Jose; C. D. Cavallaro, San Jose; W. R. Kingston, Ventura; C. G. Hamilton, Hemet; Arthur Swall, Tulare; H. C. Dunlap, at large.

The voting board also approved the nomination of W. G. Alexander of San Jose as the representative of Governor William D. Stephens on the board of directors of the new association.

The voting board chose Irwin E. Pomeroy of Santa Clara as permanent chairman of the new board and made Martin J. Madison of Hayward,

permanent secretary. Both of these men occupy similar positions on the board of trustees of the present association. Sheridan W. Baker of Santa Rosa was elected permanent vice chairman of the new voting board.

The old association will continue in existence until the 1921 prune and apricot crop has been completely cleaned up. The first crops which will be sold under the terms of the new contracts held by the reorganized association will be the prune and apricot crops produced in the fall of 1922.

THE marvelous increase in fruit and melon shipments and in wealth in Imperial county reads like a romance, but cold figures furnished the California State Department of Agriculture by F. W. White, horticultural commissioner in that district, soon dispel any such idea. According to these figures, in 1915 Imperial county shipped \$375,000 worth of tree fruits and \$400,000 worth of cantaloupes. In 1921 it shipped \$600,000 worth of tree fruits and \$13,000,000 worth of cantaloupes—an actual net valuation of \$8,000,000 out of a section where but a few years ago the fertility of the soil was questioned, the transportation limited and the market so distant that those who engaged in fruit raising in Imperial county were looked upon as having engaged in a gamble. The factors that carried the day, according to Mr. White, were water, capital and perseverance.

ESTIMATES of California's deciduous fruit production this season are: Apples, 4,802,400 bushels; peaches, 244,955 tons; pears, 63,000 tons; prunes, 62,450 tons; apricots, 51,750 tons; cherries, 9,900 tons; plums, 21,700 tons.

NEW walnut acreage in California that came into bearing this year was expected early in the season to bring the state's production up to the 60,000,000-pound mark. Late frosts, however, caused a large loss and cut down the yield in many sections. The crop is now estimated to be between 36,000,000 and 40,000,000 pounds.

W. H. Palhamus, president of the Puyallup & Sumner Fruit Growers' Association, predicts that Evergreen blackberries will this year net Washington growers 10 cents a pound.

Cannery Notes

CANNED Foods Week will be held March 1 to 8, 1922, instead of the first week in November as originally announced. This decision was reached following a conference of the National Canners' Association held recently. The date was changed, it is said, due to the fact that the later date would give the members of the association an increased

At the Sign of the Fir



Drawings, too

THE right picture does the work of a thousand words — and speaks a language that EVERYBODY understands.

The Arcady Art Department can illustrate your booklet, folder or catalog as well as our other departments can print, bind, address and mail it.

TELEPHONE
Main 8829

The Arcady Company

Complete Advertising Service

WRITING
PRINTING
MAILING
ARCADY BLDG



MULTIGRAPHING
MAILING-
LISTS
1212 & JEFFERSON

Get the most from Your Motor

For your motor to work at its best you must treat it fairly.

When you use "Red Crown" you do treat it fairly. "Red Crown" has a continuous chain of boiling points which insures ready starting, rapid acceleration and maximum power.

Look for the Red Crown sign on service stations and garages.

STANDARD OIL COMPANY
(California)



The Gasoline
of Quality

opportunity for working out more thoroughly numerous details tending to increase the success of the affair. Numerous state and other meetings will be held between now and the date of the annual meeting and a strong national-wide campaign reaching consumers of canned foods in every section of the country is planned.

THE cannery at Estacada, Oregon, which was incorporated August 20, has authorized an issue of 5000 shares. The shares will be sold only to berry growers and only stockholders' fruit will be put up. The cannery, which has been in operation only a few weeks, has completed a pack of 1200 cases of berries that has been largely sold in Chicago. From the sales that have been made it is stated that growers will receive 5 cents a pound for loganberries and 9 and 10 cents for raspberries. During the evergreen blackberry season the management of the cannery stated that it was prepared to receive 100 tons of blackberries.

THE Newberg, Oregon, cannery made a heavy run on pears this season. Three hundred persons were employed and more than two cars of pears shipped out daily in addition to considerable other fruit. The quantity of canned goods sent out weekly was about four cars and this amount, it is stated, could have been greatly increased if additional help could have been secured.

THE Lebanon, Oregon, cannery closed down September 13 for the season, with the understanding that it would stay closed unless it became necessary for it to run part of the time to close up a few of the late crops. The season for the Lebanon institution has been a light one and it has not operated to its capacity at any time, notwithstanding the fact that it handled 100 tons of blackberries this year. The cannery is able of handling 20 tons of these berries a day, but the largest run this year was 17 tons. The season for these berries is usually from three to four weeks.

THE Oregon Packing Company which opened its pear and blackberry canning season at Salem, Oregon, the latter part of August expects a 40-day run on these fruits. During the peak of the season 250 workers will be employed with a payroll of approximately \$1,000 per day. As the demand for canned blackberries is heavy the company announces that it will receive as much tonnage of this fruit as it can obtain. The opening price to growers was 4 cents a pound.

EMPLOYING 200 persons and distributing a large sum of money to employes and growers between now and January 1 will be the result of the re-opening of the Libby, McNeil & Libby cannery at Yakima, Wash., which was closed during the cherry season. Officials of the cannery announce that they have closed negotiations for 2,000 tons of pears and will take 3,000 tons of cull apples if they can be obtained at reasonable prices. The company is reported to have paid \$40 a ton for pears and will pay \$10 a ton for cull apples.

Marketing News of Interest

WASHINGTON state shipped 31 carloads of apples on September 16, being exceeded only by California and New York, according to the daily report of the federal bureau of markets, Spokane. California shipped 45 carloads and New York shipped 81 carloads. The total movement in the United States on September 16 was 265 carloads. F. o. b. prices at Wenatchee on the 16th instant were: Jonathans, extra fancy, \$1.85; fancy, \$1.50 to \$1.65. Delicious, extra fancy, \$3; fancy, \$2.25 to \$2.50.

PRICES on all sizes of 1921 pack prunes from 30-40's to 60-70's, inclusive, were advanced recently one-quarter of a cent by the California

Prune and Apricot Growers, Inc., according to announcement given out by H. G. Coykendall, general manager of the association. The advance carried out predictions made less than two weeks ago by association officials in naming the first formal prices for 1921 pack prunes, that any change from the prices quoted at that time would be to a higher level. The new prices named by the association for 1921 pack are: Sunsweet quality, 30-40's, 9 1/4c bulk basis; 40-50's, 8 1/4c bulk basis; 50-60's, 6 3/4c bulk basis; 60-70's, 6 1/4c bulk basis. Though no prices have been announced on 20-30 prunes by the association, prices being quoted in the trade at 25c a pound flat, packed in 25-pound boxes, f. o. b. California common shipping points. Prices for Growers' Brand prunes were also boosted by the association one-quarter of a cent a pound on all sizes, 30-40's to 60-70's, inclusive. Prices on all sizes of Growers' Brand prunes are one-quarter of a cent less than prices quoted for Sunsweet quality. Association officials announced that they had made a very satisfactory booking of orders for 1921 pack prunes and that they had on hand sufficient orders to practically clean up the heavy stocks of 1920 holdover now stored in their packing houses throughout the state. Packing

and shipping of these holdover stocks is now being speeded as fast as possible and all stocks of 1920 crop prunes will probably have been shipped out of the state by the middle of October.

APPLE buyers are paying \$12.50 a ton for cull apples at Clarkston, Wash., which is said to be a record price for this grade. A number of contracts have been made for orchard run apples delivered at the packing house at \$1.10 a packed box. The apple crop is the heaviest in years and the quality is good.

APPLE harvest in the Walla Walla valley started September 12, with the picking of Jonathans. Prices will run from \$2.25 for extra fancy to \$1.75 for C grades. The largest single pack in the valley will be at the Baker-Langdon orchard, which is expected to yield about 250,000 boxes.

Orders on file at local packing houses call for carload shipments to points as far east as Buffalo and as far south as New Orleans.

NEW YORK and Chicago both report the first arrivals of Winter Bananas, selling for \$4.50

There is something in being original

Ever since the early 70's Ghirardelli's Ground Chocolate has been acknowledged the *original* ground chocolate—the chocolate of proved purity, the chocolate of certainty. As a food-beverage Ghirardelli's stands alone—in taste, in flavor, in everyday economy. Say "Gear-ar-delly" to your grocer and accept no other. Made by D. Ghirardelli Co., San Francisco—since 1852.



a box. A New York firm reported to William Ferguson of Yakima, that a car of his Bartletts sold in that city for \$4.25 to \$4.65 a box, and that California Bartletts are off the market, with a strong demand for Northwest Bartletts.

▲ ▲ ▲

FIFTY Yakima valley potato growers met recently with County Inspector W. B. Meyers and State Horticulturist Close at Toppenish, for a demonstration of the grades to be used this year to meet the standard United States grades. According to the men present the valley crop will average well in the No. 1 grade, as most of the potatoes this season have made a good growth, virtually free from disease. The average No. 1 potato was quoted at \$25 a ton on the reservation on September 18.

THE first annual Rogue River Valley Pear Show which was held in the Chamber of Commerce exhibit rooms at Medford was a big success. On the closing day it was estimated that 4,000 people visited the pear exhibits which told the story of the excellence of this district for raising this fruit. There were 293 plate displays, while the number of pears on the plates totalled 2,500.

▲ ▲ ▲

PRUNE drying during the latter part of September was greatly hastened owing to the prediction by the weather man that the rainy season was about to set in and would include the whole Northwest region. Another week of good weather and it is expected to clean up the prune drying season in Oregon.

THE two largest sales of orchard property during the year in the Rogue River valley were announced recently. Colonel R. C. Washburn of Table Rock sold his fine 174-acre Table Rock orchard property to Captain H. M. Tuttle for \$40,000. Fifty-five acres are in orchard, 28 acres of commercial pears and 27 acres of Newtown and Winesap apples, and 40 acres in alfalfa. Captain Tuttle, who is from Nebraska, has been in the United States army service five years. The other sale was that of the Hampton orchard of 50 acres near Medford, owned by Mrs. Bingham of Santa Barbara, Cal., to Eric Wold of Medford for \$35,000.

PICTORIAL REVIEW



Your Winters Reading
For Only \$2.60

PICTORIAL REVIEW is the most beautifully illustrated magazine in the world. The exclusive departments, such as patterns illustrated in colors, cut-out pages for the kiddies, recipes, household hints, and the best fiction have made this magazine the favorite in millions of homes.

McCALL'S MAGAZINE numbers among its contributors such famous writers as Robert W. Chambers, Holworthy Hall, Louis Joseph Vance, Mary Garden, Fanny Hurst and many others. This furnishes the very best of fiction each month for the whole family.

BETTER FRUIT has been published in the Northwest for fifteen years, and carries articles by leading authorities pertaining to your business. We have recently added an inquiry column, and a market news column. The next twelve numbers will be the best yet.

WE ARE VERY FORTUNATE IN BEING ABLE TO OFFER YOU THESE THREE FINE MAGAZINES AT THIS LOW PRICE

Pictorial Review	\$2.50	} Regular Price	\$4.50
McCalls	1.00		
Better Fruit	1.00		
		Our Price	\$2.60
		Your Saving	\$1.90

This Coupon Will Save You Money If Mailed Before November 1st.

BETTER FRUIT, Twelfth and Jefferson Streets, Portland, Oregon.

Enclosed find \$.....for which send me Better Fruit, Pictorial Review and McCalls, all for one year.

Name Town

R. F. D..... Box..... State

Our Inquiry Department

WILL you kindly give me the statistics available in regard to the apple crop from the years 1908 to 1918. Also the meaning of the national apple crop and the Commercial Crop.—J. C. B., Washington.

We have no statistics available to give you a comparative report on apples from the years 1908 to 1918. The total apple crop for the country in 1918 was 24,743,000 barrels.

Replying to your inquiry as to the meaning of the "national apple crop" and the "commercial crop" of the country, the difference is this: The national crop means the entire crop produced in the United States, while the commercial crop applies to that part of the crop which is marketed or sold on the commercial market.

As you are probably aware, there is an immense quantity of apples that is never sold. This portion goes into home consumption and is used for other purposes, or is allowed to go to waste.

The fact that one of these crops is frequently described in barrels and the other in bushels have no particular significance. Apparently, the writer seems to use whatever term comes uppermost in his mind in describing quantities.

WILL you kindly inform me if there is any comprehensive list that is published of all known varieties of fruit, chiefly apples and pears with a correct description of them. I fancy there is such work published with a glossary of this description.—G. M. G., Kelowna, B. C.

There is no book published giving a full list of the varieties of fruit now under cultivation in the United States. The United States Department of Agriculture, Bureau of Plant Industry, Bulletin number 56 on the Nomenclature of the Apple is the most complete, on that fruit, of anything published.

The same department in Bureau of Plant Industry, Bulletin 126 on the Nomenclature of the Pear gives the most complete list on that fruit.

The New York Experiment Station at Geneva, New York, has published in book form a very good description of the most common varieties grown in that state which, by the way, includes most of the varieties grown in the United States.

They have two books on Apples of New York, one on the Plums of New York, one on Peaches of New York, and one on Cherries of New York. These can be obtained, I believe, from the state commissioners of agriculture at Albany at practically the cost of publication and they are the most satisfactory reference books published. New varieties are being introduced every year, of course, and it is impossible for any publication to keep entirely up to date because of this, but the ones listed here are, I believe, the best.

PROF. O. M. MORRIS,
State College, Pullman, Wash.

COULD I use something to disinfest the soil in which the roots of my trees are affected with what may be crown gall or some other like disease.—O. R. J., Oklahoma.

From what you tell us the diseased trees in your orchard are apparently affected with crown gall, for which there is no remedy. There is nothing you could use to sterilize or disinfest the soil in which they are planted. The safest plan for you to follow will be to dig out the trees and set new ones that have been inspected and found to be perfectly healthy.

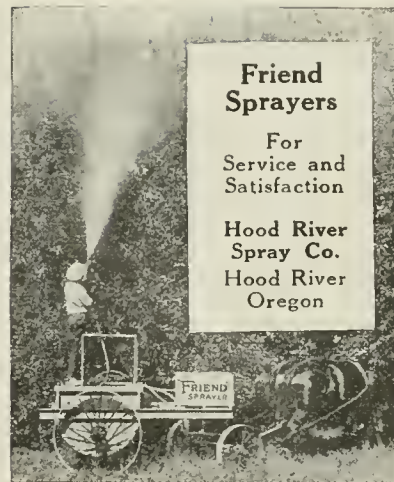
Orchardists and other friends of Floyd Young, the frost expert, who until recently was stationed for several years at Medford, will be pleased to learn that he has been promoted in the U. S. Weather Service and will become meteorologist in full charge of frost investigations and forecasting on the Pacific Coast. Mr. Young for the past year has been in charge of the weather bureau at Davenport, Iowa.

Snapshots

WASHINGTON'S apple crop will bring to the state this year \$50,000,000, an amount unprecedented in the history of the Northwest apple industry, according to a survey of the eastern and central Washington orchards by experts of the Northwest Fruit Exchange and confirmed by E. B. Kelley, district horticultural inspector at Spokane. The state is expected to produce 27,000 cars.

▲ ▲ ▲

CONTRACTS have been signed by James R. Wilson, secretary-treasurer of the Palouse corporation, whereby 35 girls from California will come to Spokane at apple picking time to pack the company's fruit at Fairfield and Waverly. The girls are orange packers in their home state and regard the Northwestern outing as a sort of holiday. The Palouse corporation expects to harvest 150,000 boxes of apples this year from its 1200 acres of trees at Waverly and Fairfield.



J. & H. GOODWIN Limited

Apple Exporters

Headquarters in United States
60 State Street
Boston, Massachusetts

The Largest Handlers of American Apples in English Markets

By using our service you can send your apples direct from the United States into the industrial centers of England. The same organization (J. & H. Goodwin, Ltd., throughout) which ships your fruit from the U. S. A., sells and distributes in London, Liverpool, Manchester, Glasgow and Hull, and on the European Continent.

This means quick handling, considerable economies and the fruit being sold in the freshest possible condition, which means greater returns.

For dependable export information write us at 60 State Street, Boston, Mass., or 127 Duane Street, New York City.

With the Poultry

THE VALUE OF THE TRAPNEST

A well known practical poultryman advises that the most prepossessing hen is not always the most industrious layer. She may be the loudest cackler, but if her owner uses trapnests she cannot fool him, for he can check up on the results.

The trap nest is so arranged that when the hen enters she is confined until released by the attendant. Specialists of the United States department of agriculture say that trap nests may be used to advantage by the best breeders of hens. It adds mechanical precision to judgement and experience in developing the flock and maintaining it at a high standard of egg production. It tames the birds and tends to stimulate laying. It furnishes definite knowledge of the traits and habits of each hen. It furnishes the most satisfactory basis for breeding, and it eliminates the non-productive hen.

In flocks of 50 or more, a three compartment trapnest should be provided for every ten hens. In smaller flocks a slightly larger proportion of nests is needed. Numbered bands are placed on the legs of the hens and a record is kept of their egg production. Frequent visits to the nests are necessary, especially when the hens are laying freely and during warm weather. There should never be less than three visits a day, and four or five would be better.

▲ ▲ ▲

CONFINING THE BACKYARD FLOCK

THERE is a double reason for confining the backyard flock. It gives a better opportunity for increasing egg production and from restraining them from straying into your neighbors' garden where they may cause damage and are almost sure to cause ill feeling.

The yard should be inclosed by a board or wire fence. Wire is preferable, as it is cheaper and the hens are less likely to fly over it, say poultry specialists of the United States Department of Agriculture. If cats prove troublesome where one is raising chickens, it may be necessary to cover the top of the yard with wire also. A board should not be used at the top of a wire fence, as this gives the hens a visible place to alight and thus tends to teach them to fly over.

A five-foot fence is high enough for most conditions, but if the hens show a tendency to fly over such a fence the flight feathers of one wing should be clipped. Leghorns need a six-foot fence. The larger the yard the better the hens will do, as it not only gives them greater opportunity to exercise, but also makes it possible to maintain a sod on the yard. In most cases not enough land will be available so that a sod can be maintained.

If the yard is fairly large, it can be divided into two parts and green crops, such as oats, wheat, rye, or Dwarf Essex rape allowed to start in one yard while the hens are confined to the other. The green crops should be sown very thick, and the following quantities will be found satisfactory for a yard 25 by 30 feet: Wheat, 23 1/4 pounds; oats, 1 1/2 pounds; rye, 3 3/4 pounds; rape, 5 ounces. when the growing stuff reaches a height of 3 to 4 inches the hens can be turned upon it and the other yard similarly sown.

▲ ▲ ▲

ECONOMY IN MODERNLY BUILT POULTRY HOUSES

MODERN poultry houses such as are used by successful poultrymen or smaller ones adapted to the small farm flock, can be built more cheaply than the old style, double constructed poultry houses of 20 years ago. How it is done is described by James Dryden, professor of poultry husbandry, in Oregon Agricultural college station bulletin No. 179. The bulletin contains plans and diagrams of construction of several sizes of poultry houses that have proved successful.

The type of house advocated has one side or end open and protected by wire screening. All

floor space is utilized for scratching by having perches, dropping-boards, and nests supported by bracket braces fastened to the walls. The smaller size, 8x12 feet, for the farm flock, can be built on runners of 3x6 inch stuff 14 feet long so that a team can move the house easily. This size is large enough to keep 40 hens in during bad weather without decreasing egg production.

Health and comfort requirements of fowls are discussed in the bulletin by Professor Dryden and the modifications imposed by location on the farmstead and the different types of houses adapted to successful poultry raising are gone into simply and clearly.

▲ ▲ ▲

Poultry Notes

GRIT is very essential to the proper feeding of fowls. Too often it is not provided continually and when given at odd times causes the fowls to eat too much. This should be avoided, as it causes bad digestive conditions.

▲ ▲ ▲

IN keeping your poultry house free of insects you will find that kerosene emulsion is more effective than the plain kerosene. Although the former is more trouble to make it lasts longer and does the work better.

▲ ▲ ▲

TO raise geese most profitably they should be afforded liberty and plenty of grassy range. They thrive best on low lying lands which are not suitable for most other fowls and being coarse feeders will eat nearly everything in the shape of green vegetation.


▲ ▲ ▲

WHEN poultry become infected with "pip" the diseased birds should be isolated. Do not remove the "pip" when it occurs on the tongue. Apply glycerine twice daily. If treated in the beginning the trouble may be cured.

▲ ▲ ▲

ALWAYS bear in mind that it pays best to raise and keep good stock. In addition to the remuneration received from the hatching eggs there is always the sale of individual birds at good prices.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Truene, Apricot, Quince, Grape Vines, Shrubbery. Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
 Salesmen everywhere. More wanted.

THE BEST IN TREES AND SHRUBBERY
 BOTH FRUITS AND ORNAMENT
E. A. Bennet Nursery Co.
 1030 Chemeketa Street
 SALEM, OREGON

FRUIT TREES
 We are extensive growers of fruit trees adapted to the Northwest.
GET OUR PRICES
COLUMBIA NURSERY COMPANY
 1490 Union Ave., No. Portland, Ore.

NOW is the time to send to
Milton Nursery Co.
 MILTON, OREGON
 For their 1921 Catalog
 Full Line of Nursery Stock
 "Genuineness and Quality"

Some Reliable Northwest Nurserymen

An Early Order
 For Fall or Spring
 Delivery

Placed with
SALEM NURSERY COMPANY
 428 Oregon Building
 SALEM, OREGON

Will receive careful attention and give you good choice of varieties

Additional Salesmen Wanted

Lucky Cross and Unique

Two never failing, double-crop varieties of strawberries which we have perfected. WHY grow only ONE crop, when you can grow TWO on the same plants?

The increasing number of growers sending to us, proves that our plants are superior. Write us for more detailed information regarding these money makers.

Evergreen Plantation
 New Meadows, Idaho

Capital City Nursery Company
 426 Oregon Building
 SALEM OREGON

Will supply you with first class stock in

FRUIT, NUT AND ORNAMENTAL TREES, SMALL FRUITS, ROSES

Send for catalog
 WE Need Salesmen

Bees and Beekeeping

Edited by AMOS BURHANS

ALTHOUGH there has been a fair flow of nectar the latter part of the fall and so far during Indian Summer reported from all over the country, it will be a good plan in early October to make sure each colony has sufficient stores for the winter. Pick a warm sunny day for the job and if you find they need feed give it to them fast. A fair colony can put away a gallon of syrup a day. Make it two parts sugar and one of water by bulk.

THE 1920 census tells us there are 3,476,346 hives of bees in the United States and that they produced about 55,000,000 pounds of honey. This makes an average per colony of less than twenty pounds per season. Many beekeepers on farms are getting from one to three hundred pounds per colony because they give the bees care and use modern methods.

IF YOU are one of those who like to keep up to the minute on beekeeping things, you had better send for the new bulletin on Control of Swarming. It is a work of 48 pages by the well known beekeeper, Geo. S. Demuth and may be had by addressing the Bee Culture Division, Bureau of Entomology, Washington, D. C. Control of Swarming is one of the secrets of successful beekeeping and this new bulletin will give you some valuable information about it.

SLOWLY but surely the big hive idea is spreading. Beekeepers who try one of the modified Dadant hives in their apiaries almost invariably get more of them. This hive gives the colony additional room for ventilation, provides eleven big frames for the brood nest, each from two inches plus deeper than the standard Langstroth frame, giving greater room for the laying of the colony in the winter and forty percent greater room for the laying of the queen. My experience with the big hives is that they winter bees better, build up faster in the spring and that the colonies in them gather more nectar.

THE thrift and work accomplished by a colony depends entirely on the queen. She should be young and bred from a mother who has made a great boney gathering record. Two seasons is about the length of her best usefulness. We queen all colonies every other year and sometimes oftener. A good young queen is the one that will stay at laying late in the fall and her colony having the fall reared bees will come through the winter best. It takes young bees to stand the winter cold. The more of them there is in the hive the stronger the colony will be when it comes out in the spring.

BEES wintered in cellars should be kept in a temperature of from 45 to 50 degrees. The cellars must be dark and clean. They should have outside doors to permit ventilation and regulation of temperature.

EXTRACTED honey is still selling over the country at twenty to twenty-five cents per pound at retail. Comb honey is bringing from thirty to fifty cents per pound. It is a wise beekeeper who sells locally all his product and keeps the price at a fair figure.

BETTER close down the entrance of the hives on the cool nights from now on until the bees are cellared or put away for the winter. In my yard in August we lost some broods because of a sudden cold snap and entrances too large to help the bees keep the brood from chilling. A space three-quarters by four inches is plenty big enough for the average colony now.

THE six states producing on farms over two million pounds of honey each in 1920 are

Iowa, California, Texas, Wisconsin, Colorado, New York. This does not include the production of honey in towns and villages which will greatly swell the amount.

HUBAM CLOVER, also known as Annual Sweet Clover, a comparatively recent discovery in the plant world, is pronounced the most perfect bee pasture that has yet been grown. The Annual White Sweet Clover is a legume plant that reaches its full maturity within three to seven months from time of planting. It grows from three to seven feet high, is one of the richest feeds known, and takes nitrogen from the air and stores it in the soil. By its use in the farm rotation as a substitute for the ordinary clovers all the advantages of a clover crop can be had the same year that another crop is harvested and thus a full year saved in the crop rotation. When in bloom the plant is covered with white flowers growing on long slender racemes and is one of the greatest bee pastures known. It is a very heavy seed producer in very wide variations of climate.

**AMERICAN GROWN
FRUIT TREE STOCKS**

Apple Seedlings, Straight or Branched. Also Pear Stocks from French and Japan Seed, American Plum, Mahaleb Cherry and Peach Seedlings in all Grades. Car Lots to Central Points.

Foreign Grown Stocks

Apple, Pear, Mahaleb, Myrobalan, Quince, Manetti and Multiflora. All Grades. In Prime Condition. Can quote in France or out of Customs in New York or at Shenandoah, Iowa. Prices reasonable.

Remember our Complete Line of General Nursery Stock for Fall and Spring trade. We are now ready to do Business. Submit List of Wants for Prices to

SHENANDOAH NURSERIES

D. S. LAKE, President
SHENANDOAH, IOWA

We are handling Oregon and Washington garden, farm and orchard products exclusively.

Our facilities and connections for the proper distribution of carlots or less of

APPLES--POTATOES--ONIONS

assures prompt and satisfactory returns to the grower.

Let us figure with you before disposing of your crops.

W. B. Glafke Co.

COMMISSION MERCHANTS

East Third and Alder Streets PORTLAND, OREGON

**Keeps
your tractor
engine**

**FIT FOR
SERVICE**

*A grade
for each type
of engine*

**STANDARD OIL COMPANY
(CALIFORNIA)**



Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

NURSERY STOCK—Italian Prune Trees and trees of all kinds. Berries and small fruits of all varieties. Buy direct and save 50 per cent. Brooks Nursery, Lafayette, Oregon.

HOMESPUN TOBACCO—10 lbs., \$2.50; 20 lbs., \$4, c. o. d. Ford Tobacco Co., Mayfield, Ky.

FARMS FOR SALE

FOR SALE—17 55/100 acres all cleared in Willamette Valley 30 miles from Portland. Splendid fruit or nut land. \$200 per acre. Terms if desired. B. L. Herbert, 51 E 8th St., North, Portland, Oregon.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edward & Bradford Lumber Co., Elk, Washington.

BIG APPLE ORCHARD and by-products plant in famous Southern-Pennsylvania Apple Belt. J. P. Stewart, 305 Carlisle Ave., York, Pa.

HAVE A WONDERFUL piece of fruit land in Josephine county, Oregon. It is sub-irrigated, deep red soil; on railway; 20 acres; some bearing cherries, rest ready to plant. Price, \$3000, only \$2000 cash. Box 44, Hugo, Oregon.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

YAKIMA VALLEY BARGAIN—15 acres rich soil, irrigated; 4 alfalfa; fruit, strawberries, some barley; house, outbuildings, well. Owner, R. I. Box 147a, Kennewick, Wash.

MISCELLANEOUS

HAPPY HOME HONEY—From blossoms of alfalfa and sweet clover, in liquid form; 6 10-lb. pails, \$9.00; 1 60-lb. can \$8.40; 2 cans, \$16.00, at Mabton. H. N. Paul, Mabton, Washington.

HOMESPUN TOBACCO—Chewing, ten pounds, \$3; 20 pounds, \$5. Smoking, 10 pounds, \$2.50; 20 pounds, \$4. Farmers Union, Mayfield, Ky.

POULTRY

PETALUMA HATCHERY—Established 1902 by L. W. Clark. Chicks every Monday and Thursday, White and Brown Leghorns. Heavy laying strain. Safe delivery guaranteed. Send for prices and terms. L. W. CLARK, 615 Main St., Petaluma, Calif.

PULLETS—We can supply O. A. C. and Tancred White Leghorn Pullets, Rhode Island Reds and Barred Rocks at all ages—some ready to lay. Also one and two year old hens, good breeders. Exceptionally fine range-raised birds. Portland Seed Co., 180 Front St., Portland, Ore.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO.

427 Oregon Building Salem, Oregon

AGENTS WANTED—Our prices are right. Columbia Nursery Co., 1490 Union Ave., No., Portland, Oregon.

BITS ABOUT FRUIT AND FRUITMEN

SHIPMENT of citrus fruits by sea from California to New York via the Panama Canal is being resumed on a large scale, according to freight traffic officials of the Admiral Line, agent on the Pacific coast for the North Atlantic & Western Steamship company. During the recent hot weather period in the East, when an unusual demand caused prices to advance rapidly the growers resorted to the overland expresses, but the market since has become stabilized again, and the fruit shipping agencies are returning once more to the water lines and their lower rates. Two weeks before its sailing date, August 20, space was engaged on the steamship *Springfield* for approximately 400 tons of oranges and lemons,

and the Admiral Line has been advised that heavier shipments may be expected when the crop of navals begins to come in. With the opening of the apple shipping season in the Pacific Northwest shipments by steamer to the Atlantic Coast and abroad will be greatly increased and the largest tonnage handled in the history of water transportation of fruits from the Pacific coast.

▲ ▲ ▲

WITH the quantity of cherries preserved in brine this year in Italy greatly reduced the outlook for good prices for the home product is looked upon as exceedingly bright. The reduction in the output of preserved cherries in Italy is due to untimely rains which caused a total failure of the sour varieties and a falling off of other kinds of 50 per cent. The United States has been the principal market for the preserved cherries of Italy taking 7,387,030 pounds, valued at \$1,497,755 in 1920. Owing to the tariff that has been placed on the importation of preserved cherries by the United States Italian exporters are said to be devoting their attention to developing markets in other countries.

▲ ▲ ▲

ACCORDING to late advices received from London representatives of American apple exporting houses the outlook for American apples in British markets is very bright this year. These advices say that the British fruit crop has been almost entirely ruined by drouth. There will be little, if any, marketable crop of the late varieties of apples while the early varieties will be of a very inferior quality. With the industrial situation righting itself and the purchasing power of the public becoming better, coupled with the fact that exchange is becoming more equalized, it is expected that the export season for box apples will be more than satisfactory.

▲ ▲ ▲

ON HIS return recently from a trip through the Middle West which included the states of Minnesota, Nebraska, Missouri, Iowa and Illinois, F. Benz, general agricultural agent of the Northern Pacific railroad, reported that this section of the country will have to have Northwest apples this year, but that Western growers must keep in mind that Eastern people will not buy apples this year at extremely high prices. Mr. Benz predicts that if the box apple crop is started this year at prices that will bring a reasonable profit it will be cleaned up early in the season.

A Valuable Book

"The Commercial Apple Industry of North America"

Published by the Macmillan Company is a new book covering all phases of the Apple Growing Industry that *Better Fruit* highly recommends to apple growers or those who contemplate engaging in this occupation. Its authors are J. C. Folger, Assistant Secretary International Apple Shippers' Association and S. M. Thompson, formerly Fruit Crop Specialist, U. S. Department of Agriculture. It is edited by L. H. Bailey, the well known authority on horticulture.

If you are interested in obtaining a copy of this valuable book send us \$3.50 and we will have same forwarded to you. Remit by postoffice money order or check to

**Better Fruit Publishing
Company**

Twelfth and Jefferson Streets
Portland, Oregon

TO PROVIDE men and women to harvest, pack and ship the enormous crop of apples now approaching maturity, a free employment agency will be established at Wenatchee. To harvest and ship the apple crop of the Wenatchee district, now estimated at nearer 16,000 cars than 15,000, the original forecast, efforts are being made to start picking a week or two earlier than usual. The exceptionally favorable weather and the healthful condition of the trees has caused the apples to grow faster than ever before.

▲ ▲ ▲

President Hitz of the Western Fruit Jobbers' Association announces that the next annual meeting of the association will be held at Fort Worth, Texas, beginning January 16.

MAZZARD SEEDS

Nurserymen wishing MAZZARD seeds can book orders with us now for crop of 1922. We will ship the cherries direct from the tree. No money required until crop is mature. Price, 10 cents.

CHERRY PARK RANCH
Prosser, Washington



Virginia Games

Fancy Black Breasted, red, exhibition games, gamey fighters. We are booking orders now for immediate shipment or later. Write us now. **GREEN VIEW POULTRY FARM**
Waynesboro, Va.

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.
Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.

How You Can Get Better Fruit's Apple Packing Chart

BETTER FRUIT's apple packing chart printed on cardboard so that it can be hung in the packing house, will be mailed to anyone desiring it, on the following terms:

One card FREE with a new subscription to BETTER FRUIT.

One card without subscription \$.10
Twelve cards without subscription... 1.00

BETTER FRUIT PUBLISHING CO.
Arcady Building Portland, Oregon

Save the roof and help save the building

Winter rains and winds are coming! Protect your buildings where the weather strikes hardest—the roof!

ORONITE SHINGLE OIL *Preserves Shingles*

Drenching rains and whipping winds cause moisture and air to penetrate the fibre of unprotected shingles and cause disintegration and decay. The hot sun causes evaporation of the natural oils in the shingle fibre and cracking and warping occur. These results of exposure hasten the day when you must stand the cost of repairs or an entire new roof.

Use ORONITE SHINGLE OIL *on all shingles*

Oronite Shingle Oil is a high-quality preservative especially prepared to protect shingles against exposure and the effect of the elements. It is used on side walls as well as on roofs. It penetrates the shingle fibre with a moisture-resisting preservative. It retards the evaporation of natural oils in the wood, prevents cracking and warping and gives longer life to the shingles.

Examine your shingle roofs *now*. Last winter was one of the heaviest in the experience of the Pacific Coast. Your shingles need attention. Put them in condition to stand up under next winter's weather. An application of Oronite Shingle Oil *now* will save your roof and help save your building.

Oronite Shingle Oil may be readily mixed with colors. Our nearest agent will be glad to give you formulas.

STANDARD OIL COMPANY
(California)

OTHER QUALITY PRODUCTS

especially prepared
for use on the farm.



Oronite Roof Paint

A high-quality protective coating for prepared roofing and metal roofs.

Mica Axle Grease

Gives a durable, smooth lubricating film under every pulling condition. Keeps the axle cool; no hot boxes, no gumming. The MICA makes it better.

Eureka Harness Oil

Preserves the original strength and life of leather and keeps it soft and pliable. Keeps harness "new looking."

Standard Hand Separator Oil

Correct Lubrication for your Hand Separator, under the conditions of high speed and close fitting parts.



ORONITE *means* QUALITY

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 XVI

NOVEMBER, 1921

NUMBER 5

A4 Columbia Univ Libr
30Dec22



Pride of the Fruit Stand

Features in This Issue:—

- Water Shipments of Pacific Coast Fruits
- Preparing the Boxed Apple for Distribution
- Use of Commercial Fertilizer in Montana
- Winter Injury to Berry Plants
- Success With Evergreen Blackberries

*20 Cents
The Single Copy*

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON
Subscription One Dollar per Year in the United States; Canada and Foreign, Including Postage, Two Dollars, Payable in American Exchange

Export Fruit Shipments to Europe

LET OUR FORWARDING DEPARTMENT HANDLE YOUR SHIPMENTS THROUGH PORTLAND

Our Services Include:

Rate quotations, booking of steamer space, accomplishment of rail loadings, supervision of strapping, payment of freight for shippers' account, writing of marine insurance and issuance and disposal of all ocean transportation documents.

Our Charges \$5.00 Per Car

OREGON PACIFIC COMPANY

Agents:

HOLLAND-AMERICA LINE
THE ROYAL MAIL STEAM PACKET COMPANY
Steamers Equipped with Cool Storage Compartments

TOYO KISEN KAISHA.....Service to Japan, China and South America

203 Wilcox Building

Phone Main 4565

Portland, Oregon

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
LOS ANGELES HARBOR

AND

LONDON—LIVERPOOL—GLASGOW—HULL—ROTTERDAM—AMSTERDAM
ANTWERP—HAMBURG and HAVRE

From Pacific Coast Ports	Loading	From Europe	Loading
S. S. KINDERDIJK	Middle November	S. S. NEBRASKA	Late October
S. S. NEBRASKA	Late November	S. S. MOERDIJK	Middle November
S. S. EEMDIJK	Early December	S. S. KINDERDIJK	Late December
S. S. MOERDIJK	Late December		

All Steamers Equipped with Large Coolrooms and Refrigerators for the Transportation of Fish, Fruit, Cheese and Other Perishable Cargo

For freight rates and space apply:

*The Royal Mail Steam Packet Co., Wilcox Bldg., Portland, Oregon—
Phone Main 4565*

*Cables:*POUPART,
LONDON*Codes:*A B C
(5th Edition)
Marconi
International*Bankers:*Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.**T. J. POUPART**

(John Poupart, William Ravenhill)

Covent Garden, London, W. C. 2

REGISTERED



TRADE MARK

We are pleased to announce that we have arranged for Sam Birch to again visit all our shippers.

Members of

***"The Proof of the Pudding Is in the Eating"***

Last year, we operated for the first time in Northwest fruit, though we have handled many big shipments from British Columbia for a number of years.

We handled last year 225 carloads of Northwest fruit entirely on a consignment basis.

Apparently the pudding we offered last year was good, for our friends have come back for more, bringing many of their neighbors with them, so that this year we will ship to England something over 400 carloads, all to go through the Panama Canal.

Our Mr. Birch has opened permanent offices in Portland, Oregon, and will be glad to advise with anyone who wishes to enter the fine English market and avail themselves of the Poupart Service.

SPECIAL NOTICE

We have now opened a branch at Liverpool which will be conducted on the same lines as London. Growers can communicate direct with the manager,

T. J. POUPART
54 Stanley St.
LIVERPOOL

**The Largest Firm of Fruit
Salesmen in Great Britain**

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)
COMMISSION THE EXCLUSIVE BASIS (Purchase propositions
cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

SPECIAL NOTICE

To care for our growing Pacific Coast business, we have opened offices at 807 Wilcox Bldg., Portland, Oregon, with Mr. Sam Birch in charge. Phone Broadway 5462.

A VALUABLE BOOK***"The Commercial Apple Industry of North America"***

Published by the Macmillan Company is a new book covering all phases of the Apple Growing Industry that "Better Fruit" highly recommends to apple growers or those who contemplate engaging in this occupation. Its authors are J. C. Folger, Assistant Secretary International Apple Shippers' Association, and S. M. Thompson, formerly Fruit Crop Specialist, U. S. Department of Agriculture. It is edited by L. H. Bailey, the well known authority on horticulture.

If you are interested in obtaining a copy of this valuable book send us \$3.50 and we will have same forwarded to you. Remit by postoffice money order or check to

Better Fruit Publishing Company
Twelfth and Jefferson Streets, Portland, Oregon

**How You Can Get
Better Fruit's
Apple Packing Chart**


BETTER FRUIT's apple packing chart printed on cardboard so that it can be hung in the packing house, will be mailed to anyone desiring it, on the following terms:

One card FREE with a new subscription to BETTER FRUIT.
One card without subscription ... \$.10
Twelve cards without subscription ... 1.00

BETTER FRUIT PUBLISHING CO.
Arcady Building Portland, Oregon

Warning to Orchardists!

How are your grades running? Have you many five-tier apples? If so, why? You perhaps will say "the freeze," but this is only true with some trees. The real reason is your orchard is running down slowly, but surely.

Not Like This 

But Like This 

The good years only lull you into false security. You have got to fertilize, and the quicker you make up your mind to this the better.

Fertilize the Right Way—

Fertilize the Marine Products Co. way. Fertilize the old-fashioned way. Fertilize with a complete fertilizer. Every natural manure is a complete fertilizer. Why experiment with one plant food when three are needed? Your limiting factor this year will not necessarily be your limiting factor tomorrow. Therefore, use the complete fertilizer and you can't go wrong.

Use Clark's Special Orchard Dressing

Six per cent nitrogen, 10 per cent phosphoric acid, 4 per cent potash, 100 per cent organic, which will invigorate bacterial action and will build up your soil and is always safe.

Made of Blood, Fish, Meat, Bone, Kelp.

Last Year We Gave You a Lot of Wenatchee Results; Now They Are Coming From Yakima and Grandview

JUST SHIPPED STRAIGHT TRAINLOAD TO YAKIMA

Read What Mr. Howe Says

Grandview, Wash., Sept. 17, 1921.
MARINE PRODUCTS CO.
Tacoma, Washington.
Dear Sirs:—
I used three tons of your Clark Special Orchard Dressing Fertilizer on my orchard, and have pleasure in stating that I got very fine results. My orchard was badly run down, and I thought the trees were dying, but this year they seem to have a new lease of life, and the fruit is the talk of the growers all around.
I shall certainly recommend your Fertilizer.
(Signed) LON R. HOWE.

Read What Mr. Sutton Says

Grandview, Wash., Sept. 20, 1921.
MARINE PRODUCTS CO., INC.
Tacoma, Washington.
Gentlemen:—
I used two tons of your Harris Special Orchard Dressing Fertilizer, and must say that it has given very satisfactory results. My apples are larger and higher colored where I have used it, and I intend to use it this year over my entire orchard, but expect to use Clark's Special Orchard Dressing Fertilizer, as I want a little more growth in my trees.
Very truly yours,
(Signed) ORA SUTTON.

Read What Mr. Towne Says

Grandview, Wash., Sept. 20, 1921.
MARINE PRODUCTS CO., INC.
Tacoma, Washington.
Gentlemen:—
I used one ton of your Clark's Special Orchard Dressing Fertilizer, giving it a rather hard test, but find that it has given excellent results, giving me larger and better colored apples, and I will use a lot more of it this year.
Yours for better fruit,
H. F. TOWNE.

These are in the Yakima district, and are the result of the first year's fertilizing. The accumulative effects are going to be far better. If you have had alfalfa for years and have a lot of nitrogen growth, then balance up with HARRIS SPECIAL. Analysis—1 per cent nitrogen, 8 per cent phosphoric acid, 10 per cent potash. This will overcome the open texture of wood and fruit, the bad color, the late maturity, the bad keeping quality, the susceptibility to extremes of temperature which always come with over nitrogenation.

Mr. Harris, special expert direct from the factory, will remain in Yakima for a limited period and will be glad to give growers the benefit of his advice. Don't delay. This fertilizer wants to go down in the fall. Cars are coming forward in November. Get your order in.

Marine Products Co., Inc.

TACOMA, WASHINGTON
Manufacturers

Dealers Wire for Open Territory

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, NOVEMBER 1, 1921

NUMBER 5

Water Shipment of Pacific Coast Fruits

By THE EDITOR

Experience has taught fruit growers of the Northwest that dependence on railroads alone as a means of transporting their crops to market in this country brings both disappointment and loss at times. It is encouraging, then, to find that water transportation is fast becoming a means of moving Pacific Coast fruits. Attempt is made in this article to show not merely the development of shipping by boat, but to point out as well the resultant benefits that come from more successful invasion of foreign markets.—EDITOR.

TWO weeks ago the first big cargo of apples shipped this season direct from the Pacific Coast to Europe was taken out of Seattle and Portland on the big ocean steamer Northumberland. The refrigerator cargo consisted of a little more than 100 carloads of apples and six or seven carloads of pears.

A few days later two more large shipments of apples going to Europe went forward on the British steamers Moliere and Cardiganshire. Early this month the steamers Woodarra and Nebraskan are due to load apples out of Northwestern ports for destinations in England and France.

Analyzed, these facts have important significance to fruit growers of the Pacific Coast. They mean that shipment of fruit by water routes is safely past the experimental stage and is to be more and more of a factor in the distribution of fruits grown here. They mean that shipping firms have come to realize the importance of fruit shipments and have met developments by fitting many of their boats with refrigerator space. They mean that Northwestern fruits have more firmly established themselves in certain European markets.

In short, these shipments of whole trainloads of fruit out of this section by boat represent an important advance in distribution and marketing of coast fruit crops. This advance, as it may be noted today, is one of real consequence—what it may mean for the future is pleasing to contemplate.

That shipment of Pacific Coast fruits direct to England and ports of Europe by

boat is a proven success and is certain to become increasingly popular is the belief of Sam Birch, representative in the Northwest of the great English fruit firm of T. J. Poupart. Mr. Birch, after a year of trial shipments of apples and pears from Washington and Oregon, last month opened a permanent office for his firm in the Wilcox building, in Portland. Directing operations from there he expects to develop a fruit export business of extensive scope.

The development of adequate and efficient refrigerator service by trans-Atlantic steamers between coast points and Europe was one of the factors that influenced Mr. Birch's firm to open a permanent branch in the Northwest. Last year most of the apple and pear shipments sent to his firm in London and Liverpool went by rail across the continent and were shipped by boat from New York, Montreal or Halifax.

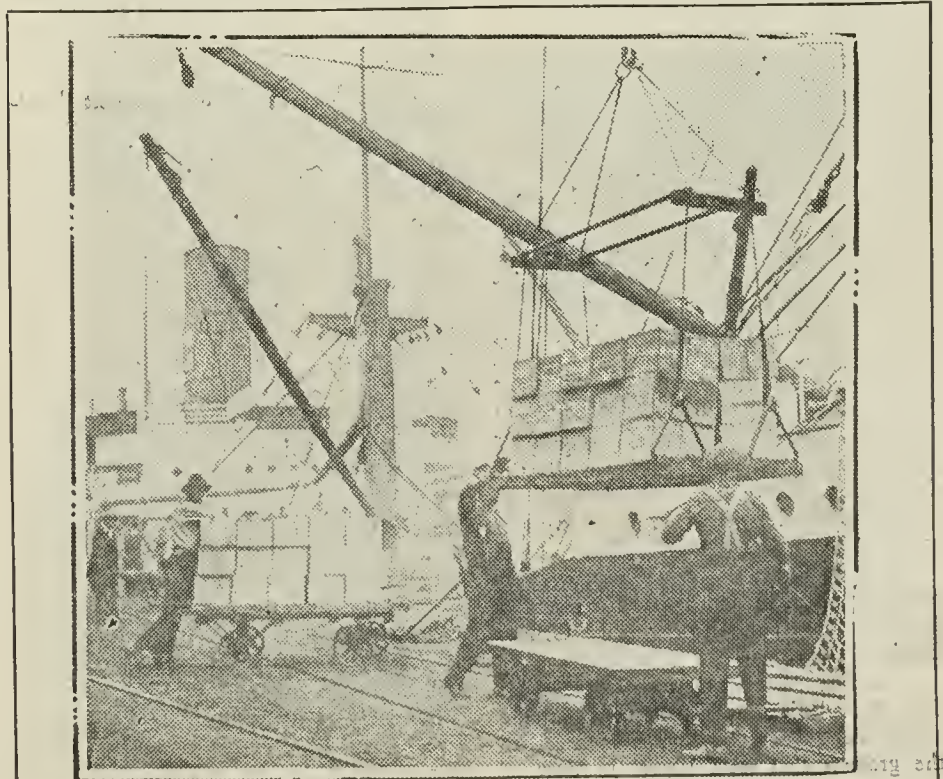
Without particular disparagement to the service given by the railroads, Mr. Birch

finds vital advantages in the all-water route, and almost without exception all shipments of his firm this season are going on trans-Atlantic steamers.

"In the first place," said Mr. Birch, discussing the problem, "neither I nor members of my firm knew how successful and convenient a thing the Panama canal is. Now we know of its advantages.

"Then, in the matter of handling, how much simpler the boat shipments make our problems. At the ports here I supervise the loading. In England representatives of our firm watch the unloading. There is no side-tracking and no shunting and bumping of the shipments in transit. Handling of the shipments is cut to a minimum. The fruit arrives in the markets of London, Liverpool, Glasgow, Southampton or other cities in excellent condition almost without exception."

The largest space reservation announced by Mr. Birch has been taken on the Nebraskan, on which he expects to ship 22,000 boxes of apples. Total shipments



Modern Methods of Conveying Boxed Apples Aboard a Vessel



Giant Steamer "Northumberland," Which Carries First Big Cargo of Northwestern Apples to England
(Photos with article by courtesy Portland Telegram)

for T. J. Poupart before the season has ended, Mr. Birch stated, will not be less than 200,000 boxes. Considering the fact that this is the first season the firm has had an established agency in the Northwest, this record will be a remarkable one. It should be proof that the markets of England are capable of absorbing an increasing supply of apples and pears from orchards of the coast country.

Mr. Birch has expressed himself as optimistic regarding fruit market conditions in England this fall. It is true that unemployment is as prevalent there as in this country, yet there is about equal purchasing power. And, what counts most, the Englishman has learned to appreciate the delicious flavor and quality of the apples grown here. He has learned, Pacific Coast growers will be delighted to note, to call for their apples when he wants the best.

The English, as is pretty well known, prefer the yellow apples. Newtown Pippins are their favorite, and Mr. Birch states that his shipments will include at least 60 cars of Newtowns. To the English there have come to be two kinds of Newtowns—those grown in California and those grown in the Northwest. In quest of his favorite apples the Englishman asks the shopkeeper merely for "Californias" or "Oregons," and he is given his Newtowns accordingly.

Other than the Newtown apples, shipments from here to England consist of Spitzenbergs, Jonathans and Grimes Golden.

It is due Mr. Birch to state that his firm is building up its business on the consignment basis, but with advances to the growers that seem liberal in view of their general experience with commission

brokers. He gives proof of returns from last season's business that reflect much credit upon his firm and that were highly pleasing to the growers.

Apropos of the discussion of shipments by boat, Mr. Birch has stated that there will be a saving in costs this year that must be appreciated by the growers. Where the gross cost of landing a box of apples in England last season was \$1.66 he estimates that this season it will be but \$1.32. This is a saving that bulks large on extensive consignments. It is worth noting even that any strengthening of the English exchange market will mean extra profits for shippers.

Just as there has been a constant development of the market for Western apples and pears in England, there is reason to hope for somewhat similar development in other European countries and also in South American countries. Investigators in South America report that the apple is quite a favorite delicacy with certain peoples. California has been supplying a considerable trade there with her apples. Further expansion of South American markets and of any oriental or island nations to the west must, of course, be dependent on water transportation.

Again, if the house of representatives follows the lead of the senate in adopting the senate measure for free tolls through the Panama canal for vessels in American coastwise service, there will be further immediate increase in steamer shipments of fruit from Pacific Coast points to markets of the East. There is reason to hope for such action in congress.

In California the citrus fruit growers have enthusiastically taken up a movement to organize their own water transportation line as a means of putting their products

into Eastern markets. At Los Angeles the California Fruit Growers' Exchange has under way the formation of a \$2,000,000 steamship company to charter and operate a line of boats. It will be called the Producers' Steamship company. It is planned to assure the undertaking by getting contracts with growers of Southern California guaranteeing a yearly tonnage of 2,000,000 boxes, or 5,000 carloads. The capital stock is to be obtained by sale of 20,000 shares at \$100.

This California plan contemplates erection of a pre-cooling plant and wharf at San Pedro; purchase of trucking equipment; chartering of six fast ships and the procuring of adequate terminal facilities at Philadelphia, New York and Boston. Development of these plans will be watched with keen interest by fruit men of the West.

From these facts Western fruit men can hardly fail to draw pleasing conclusions. The facts point indisputably to the expansion of markets, the stabilizing of prices and the more economical distribution of fruit products of the Pacific Coast country.

The earliest shipment of new crop prunes sent from Oregon was dispatched from Riddle to Minneapolis the first week in October by the Oregon Growers' Association. A few days later the initial shipment of Willamette Valley Mistland prunes was started to Toronto, Canada. This was a straight shipment of 30s, packed in 25-pound boxes.

Prunes, for obvious reasons are unusually large this season. In some lots as many as half have graded 20-30s. At Ten Mile, Oregon, Mohr & Moss are said to have exhibited eight prunes that weighed a pound.

Preparing the Boxed Apple for Distribution

By RAYMOND PAILTHORP

Investigator in Marketing Fruits and Vegetables, in Collaboration With Harold W. Samson,
Specialist in Standardization, With Department of Agriculture

APPLÉ PACKING HOUSES may be classified in two groups, individual packing houses, which are more commonly known as ranch packing houses, and community houses, operated either by co-operative associations or by individuals. The percentage of the crop packed in community houses is increasing steadily. The same basic principles of construction and equipment are applicable to all types of houses and the equipment and methods of operation in the larger community houses are suitable to a large extent for use in the ranch houses. The fruit should be passed through the various operations in an orderly way, moving in one direction from the receiving point to the storage or car.

Community packing houses are especially desirable in the apple-growing districts of the Northwest, where the acreage is usually concentrated in the river valleys and where individual holdings with few exceptions are small, ranging from 5 to 15 acres. A group of growers by joining forces may easily finance the erection of a modern packing establishment. In a community house it is possible to perfect an organization of trained men to bring the grading and packing operations to a uniformly high standard. The operations are generally on a scale large enough to warrant the employment of competent workmen to supervise the various operations, and the cost of inspection is greatly reduced by having this work done at a central point. The cost of packing in a community house is not always lower than where the work is done by the individual, but it usually can be done more rapidly.

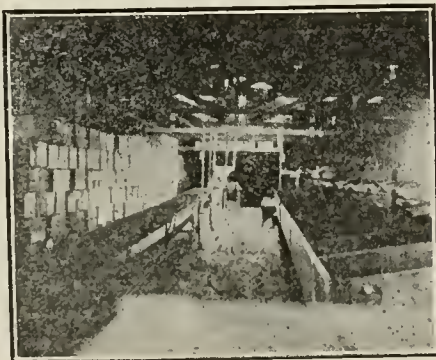
One important factor in favor of central houses is better conditions for the employment of labor. Very few of the smaller ranches have adequate housing and subsistence facilities for the care of their additional help during the packing season. Such living conditions do not attract laborers. Some growers have tried hauling the packers back and forth from town each day, but this practice is not satisfactory because much time is lost on the road. Then, too, help is usually at such premium that if one person is tardy in reporting the grower will detain the remainder of the crew waiting his arrival. As the work is generally paid by the piece the employees are inclined to seek employment where they can put in full time and have comfortable living quarters. In community houses it is also easy to provide for the comfort of the employees in the packing room. Such rooms when provided with an abundance of sunlight are very comfortable during the greater part of the day,

Advantages of community packing houses for apple growers of many sections of the Northwest were pointed out in an article presented last month. Here we have from the investigations of Professors Pailthorp and Samson further detail of the benefits and economies of such community plants. In addition, there are presented the definite and concrete requirements to be taken into consideration in planning and constructing the community packing house.—EDITOR.

but during extremely cold weather and in early morning artificial heat is needed. Some of the larger houses have steam or hot water heat for the offices, and pipes could be installed along the side walls of the packing room. Hot-air furnaces and oil or coal stoves can also be used satisfactorily.

To provide for the comfort of the employees while engaged in packing on hot summer days, it has been found advisable in some houses to place about 8 inches of mill shavings or sawdust in the ceiling to keep out the heat. If the roof is flat or the loft is not used for the storage of boxes, this insulating material may be placed loosely on the ceiling boards. This arrangement also serves to retain the heat in cold weather.

ALTHOUGH the better class of house is utilized usually for both packing and storage purposes, it should be understood at the outset that the fundamental principles underlying the construction of storage houses and of packing rooms are by no means identical. Packing in storage room is a far too common practice. A storage room should be well insulated, properly ventilated, without windows, and with re-



Gravity Conveyor for Carrying Packed Boxes to the Lidding Press. Underneath Is a Slide for Carrying Empty Boxes to the Packer

latively few doors for use in receiving and delivering the fruit. It should be used solely as a storage house. On the other hand, the best type of packing room is provided with abundant light and adequate operating space and should be equipped to furnish artificial heat during the cold weather for the comfort of the employees. Such a room is not fitted for the storage of either loose or packed fruit, as the quality of apples is invariably impaired by the high temperatures. In a large number of houses, proper provision has been made for the storage of packed fruit, but in comparatively few houses is the loose fruit storage separate from the packing operations.

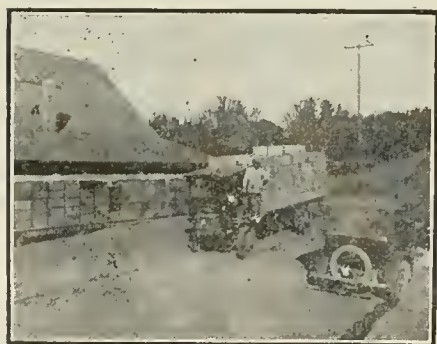
The best site for a ranch packing house usually is found near the residence and other farm buildings, close to the main traveled road. Such a location is particularly desirable where there is a common storage house in connection with the packing house, as the storage house is usually air cooled and requires the attention of some one to operate the ventilators during the storage season. If the house is a considerable distance from the ranch house it is less likely to be cared for properly. In large orchards situated on level land it is often an advantage to locate the packing house near the middle of the orchard to reduce hauling distance for the loose fruit. In such cases it is necessary to provide a good road from the house to the main traveled road to facilitate the hauling of packed fruit. If the orchard is located on hilly land the house should be built at a point which will necessitate the minimum amount of up hill hauling. Sometimes a hillside can be utilized to advantage by placing the packing room on the second floor and providing for receiving the fruit on this floor on the upper side of the building. The packed fruit can then be conveyed by means of gravity conveyors to the storage room on the ground floor and loaded out on the lower side of the house. The receiving platform should be level with the wagon beds, and the loading platform should also be at this level or at the level of the car floor in case the house is on the railroad.

A community house, wherever possible, should be located on the railroad to eliminate the expense of hauling packed fruit to the car and to permit the loading of cars when weather conditions prevent hauling.

WOOD, brick, concrete, or tile are used in the construction of packing houses, the choice of materials being determined by the cost and the fire risk. As

the packing and storage rooms are usually parts of the same building, the same material is ordinarily used in the construction of each unit, although the storage room is insulated, and the packing room is not. Where the cost of excavating is high or where water is encountered in excavating, it is more economical and satisfactory to build a house without a basement. In the past, one-story houses have been more popular because the fruit could be handled more economically on one floor. It is, however, more expensive to construct a one-story house with a given floor space than to construct a two-story house with the same floor area, and in recent years the development of efficient mechanical conveyors has made it possible to elevate the fruit to an upper floor at a very low cost. In a two-story packing house built without a basement, one end of the upper floor should be used for packing operations, as it may be lighted from three sides. The remaining space may be blocked off by the use of an insulated divided partition and used for the storage of loose fruit. The ground floor is used for assembling and storing the packed fruit. To provide a clear floor space in the packing room the roof should be carried upon trusses. It is frequently desirable to provide covered platforms for receiving the loose fruit and loading out the packed fruit. Where these are used, the house should be so arranged that the packing room will not be cut off from the light.

It is impossible to determine, with accuracy, the size of a house to build to accommodate a given tonnage. Under the conditions which have prevailed in recent years, the transportation companies have been unable to provide a regular supply of cars, and a house designed to ship several cars a day may not receive any for several days; so it is necessary to provide an amount of storage space which, under other circumstances, might be considered excessive. A house built on a railway spur and designed to provide a large number of loading-out doors together with abundant packing facilities has proved most desirable, especially in some districts where, during the early fall, a large number of refrigerator cars have usually been held on the sidetracks and in the railroad yards waiting loading.



A Truck Loaded With 315 Packed Boxes of Apples

For the first few weeks of the shipping season, the railroads are able to meet all demands for cars, and of course they want to have this equipment loaded and in service. Houses constructed with these conditions in mind have been able to take advantage of the abundant supply early in the season. Other houses which control an equal amount of tonnage, but with limited packing facilities and relatively few loading-out doors, have been forced to ship later in the season when cars were scarce and often during severe winter weather when large losses were suffered.

THE most important feature in the construction of the packing houses, but the most commonly neglected, is the arrangement for proper lighting. The most efficient work is possible only when the room is properly illuminated at all times. Most people understand that dim lighting interferes with the accuracy and efficiency of grading operations, but comparatively few realize the glare of a direct light is equally bad. To avoid the latter condition, architects have sometimes advised the use of north and east windows, and if enough windows are used, such light is satisfactory during the middle of the day, but not intense enough for early mornings or late afternoons or for dull days during the late fall and winter.

Houses constructed to admit light through a narrow lantern or penthouse roof extending the length of the packing room are very common in some districts. This light usually is supplemented by a few low and rather small windows placed along the side and end walls, but such a method is very unsatisfactory and should not be allowed in future construction.

Hipped-roof skylights and high windows in sufficient numbers to light the interior thoroughly are the most satisfactory method of lighting. The hipped-roof skylight is preferable to a straight plain glass, as the style of construction permits it to receive some light throughout the day. The side windows should be placed 5 feet up the wall so that the light will not be blocked by the machines, conveyors, or stacked boxes, but will flood unobstructed to the center of the room. To light a packing room 100 feet long by 70 feet wide will require the use of continuous sash 4 feet high along the two sides and one end. A room 40 feet by 60 feet will require continuous sash of the same height along two sides only.

Where sizing machines are used, the sorting table is usually placed next to the partition between the packing room and the loose fruit storage, so that the sorters receive very little light from the windows at the opposite end of the room. To increase the amount of illumination at this point hipped-roof sky lights should be installed over each sorting table. These skylights should be made of translucent glass to diminish the glare of the sun on

bright days. They need not be larger than 3 feet by 4 feet in size. Where the house is constructed with a loft, light shafts or wells are used to admit the light and concentrate it directly over the sorting table. These shafts should flare so that at the bottom, which is directly over the heads of the sorters, the dimensions are the same as those of the sorting table. When hand tables are arranged down the center of a large packing room, a large hipped-roof skylight should be placed above to insure plenty of light for the graders. White paint is commonly applied to the light shafts and other parts of the packing room to intensify and reflect whatever light is available.

It is necessary to provide electric lights for use at night and on very dark days. The packing operations which can be conducted efficiently in a rather dim light can be illuminated by globes suspended by drop cords, but such provision is not satisfactory for the sorting table. For this purpose a rectangular-shaped reflector or hood, should be used. This reflector should be the same length as the table and about 18 inches wide. It should be suspended by ropes and equipped with a pulley so that it may be drawn up and away from the table when natural light is available. Such a reflector protects the eyes from all glare and also enables the sorting crew to concentrate their attention better on their work as a view of the workers on the opposite side of the table is obstructed. This reflector should be furnished with six 75-watt blue glass daylight nitrogen electric globes. The light from such globes is not glaring and is the best substitute for sunlight in examining defects and color.

In former years the apples, both loose and packed, were hauled in wagons, but motor trucks have replaced them to a very large extent. It is probable that the cost of this operation has not been lowered materially by the change, but the time and labor have been reduced, and both of these factors are exceedingly important during the packing season. As a general thing, individual growers can not afford to maintain trucks to be used only for a comparatively short season, and for that reason, they, and often the dealers and growers' associations as well, find it more convenient and economical to contract for this work.

See Us

At the Seattle Fruit Show

November 21-26

One of our Graders will be working

Cutler Mfg. Co.

353 E. Tenth St. Portland, Oregon

Set aside the Week of Nov. 21-26
for the
**PACIFIC NORTHWEST
FRUIT EXPOSITION**

The greatest display of the finest fruits ever assembled at one time and in one place will be shown at the Bell Street Terminal Exposition Building, in Seattle, during Thanksgiving Week.

The Exposition Building, 800 feet long and 70 feet wide, will be filled with the exhibits from all the fruit districts of the Pacific Northwest. There will also be a complete display of machinery, appliances and devices for use in the fruit industry. A part of each day is set aside for lectures and discussions of all the problems of the grower.

Twelve Thousand Dollars in Prizes

The Premium List, beginning with the \$1,000 cash and gold banner sweepstakes prize for the best collective exhibit made by any community, covers all sorts of competitions with awards in cash, merchandise, silver cups, trophies and banners—a chance for every grower.

THIS IS YOUR EXPOSITION

The purpose is to arouse all the people of the Pacific Northwest to a lively appreciation of the magnitude and importance of the fruit industry.

Not only better fruits, but better transportation, better facilities for distribution and marketing, are essential to the welfare of the industry.

Reduced Rates on All Lines—One and One-Half Fare for Round Trip

From All Points in Washington, Oregon and Northern Idaho

PACIFIC NORTHWEST FRUIT EXPOSITION

BELL STREET TERMINAL—SEATTLE

November 21 to 26 Inclusive

Winter Injury to Berry Plants

By J. L. STAHL.

Horticulturist of Western Washington Experiment Station, With Arthur Frank, Plant Pathologist of the Station, as Collaborator.

ALMOST every year berries and other fruits in this section are injured by freezing to a greater or less degree. Sometimes the injury is more severe on one type of berry than another, depending on the condition or hardiness of the canes at the time of the lowest temperatures. The danger periods are usually in November and December on the bearing canes and roots and April and May for the young shoots. Injury which occurs from freezing of the plants during the fall and winter months is usually classed as winter injury. That which occurs to new growing shoots in spring we consider frost injury.

There are many factors both natural and artificial which may play an important part in the amount or extent of winter injury throughout a locality. Oftentimes this condition cannot be avoided, but sometimes by study of the causes and careful cultural methods given it can be prevented. To a lesser degree frost injury can sometimes be prevented by practical methods.

Some of the factors which produce a tendency toward injury by frost are:

Late irrigation or early fall rains; poor drainage; continued cultivation late in the season; neglect to thin young canes; late summer fertilizing; excessive fertilization; warm, wet fall followed by low temperatures; summer drought, producing weak canes; late frosts, injuring new shoots.

Some of the factors which have a tendency to resist or avoid winter injury are:

Good soil drainage; good air drainage; frequent cultivation during the early growing season; early normal ripening of canes.

IN SOIL where irrigation is necessary the soil moisture and ripening of the cane problems can be largely controlled. Sometimes the natural outlet of cold air is

barred and obstructed by a few trees which can be cut out and the frost pocket removed. Thinning of young shoots during the growing season will allow greater air and sunshine contact and consequently an earlier ripening of wood in the fall. Removal of old canes after the picking season will also aid in this. Immature canes are easily injured by low temperatures.

Fertilization is an important practice that should receive careful study. Excessive fertilization of a neglected or abused soil is dangerous. Overfertilization causes overgrown, sappy canes readily broken, easily frozen in winter and soft berries.

There are many types of fall and winter freezing. Some of them are:

Freezing of sappy canes in early fall; freezing of canes and roots from extreme low temperature; freezing of sappy canes near the ground line in the early spring; frost just before the blossom time, producing a blight on the flower stem; frost during the blossom time killing the flower organs; frost of new shoots in the early spring; frosting of new shoots, causing a breaking down of pith cells.

It does not take a plant specialist to recognize some of the symptoms of winter or frost injury when they are once known. Some of them are:

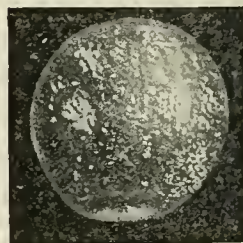
Excessive shedding of bark on the lower part of the cane; whitening of the entire cane; excessive brittleness of the cane in the early spring; dead or rotted roots; chocolate-colored pith in lower part of the cane; dry pith with a separation of the cells; water soaked appearance of the inner bark; sour sap odor or taste; dead terminal growth; dead buds; wilted shoots or buds immediately after starting out; blackened or wilted new shoots; brown or blackened fruit stems; blackened flowers.



ALBATROSS BRANDS

How to prevent the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in spots—or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.



Note the "blotch" or "burn" of the lead on this apple

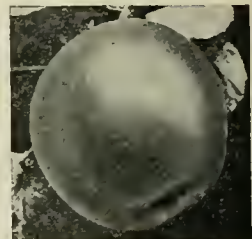
spots—or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.



Directions sent with each order Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. Bbl.	Boxes	2 lb. Pkgs.
22¢ lb.	24¢ lb.	25¢ lb.

Freight prepaid to Northwest points.

Note: If you use Casien, Albatross Superfine, is the brand to buy. Very finely ground—quickly soluble when mixed with alkali.



—for storage plants, packing sheds, etc.

During the last six years a very large proportion of the major industrial plants, warehouses, lumber mills and canneries (list on application) have been made "pick and span" with Albatross Cold Water Paint. This paint is very economical to use—drys snow white—will NOT peel or rub off—retards fire—easy to apply—and when properly applied, reduces insurance rates. Has remarkable spreading and covering qualities—will work over wood, rock, plaster or other material. For almost any kind of commercial interior, Albatross Cold Water Paint is unequalled. Extensively used in the fruit world for storage plants, packing sheds, etc. Tell us your requirements—we can meet them to your complete satisfaction. * * * General Basic Products Co., Sole Manufacturers, 2926 16th Ave. S.W., Seattle, U.S.A. Dealers. Address us for attractive sales proposition.

APPLE GROWERS AND SHIPPERS! ATTENTION!

Our modern up-to-date cold storage rooms under supervision of cold storage experts are available for apple storage. We are situated to handle apples in transit by rail or water.

For Rates and Particulars Apply to

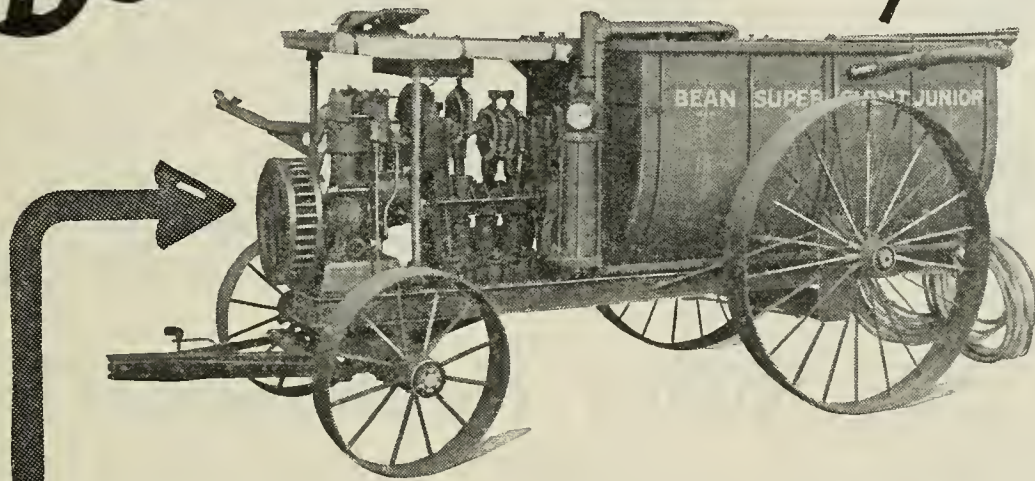
Fourth Street Warehouse & Cold Storage Company

PHONE BROADWAY 4300 and 1850

FOURTH AND HOYT STREETS

PORTLAND, OREGON

"Bean" SUPER GIANT JUNIOR sprayer



Greater Pressure and Larger Capacity

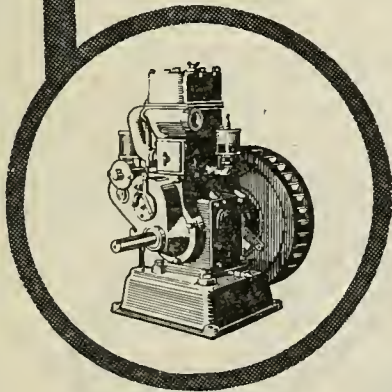
Does Quicker, Better Work at Less Cost

Adequate equipment is absolutely necessary for thorough spraying. It is impossible to thoroughly spray a large acreage with one small pump. There is some one application on all fruit—especially on apples—which must be made within a very limited period. Often the loss that results from failure to get the trees sprayed in time is far greater than the cost of adequate equipment.

The Bean Super-Giant Junior with its nozzle capacity of 14 gallons a minute and its 300-gallon tank, does 50 per cent more work in a given time than the old-type outfit with its 200-gallon tank. You not only make a big saving in the cost of spraying, but you get the material onto the trees when it does the most good.

The New Bean 6 H.P. Engine

A Feature of the 1922 Bean Line



A big advance step in the development of sprayer power. This dependable engine was created by Mr. E. B. Cushman, famous as a designer of successful gas engines, and is undoubtedly his finest achievement. Compact, light in weight, and so perfectly balanced that it runs remarkably

free from vibration even under full power. Can be quickly and easily made available for other power jobs when sprayer is not in use. Can also be used to replace the engine now on your rig, if you want more power and higher pressure.

Sign and Send the Coupon for New Bean Catalog

It illustrates and describes the entire Bean line for 1922, from the reliable little Bean Simplicity with a capacity of 4 3/4 gallons a minute to the Bean Super-Giant with a capacity of 20 to 25 gallons a minute. There is a Bean that exactly fits your requirements.

BEAN SPRAY PUMP CO.

Originators of the First High Pressure Spray Pump

19 Hosmer Street
LANSING, MICH.

118 W. Julian Street
SAN JOSE, CALIF.

19 Hosmer St., Lansing, Mich.
118 W. Julian St., San Jose, Cal.
Name BEAN SPRAY PUMP CO.
Street
Town Please send your "Sprayer Catalog"
State
Kind of Fruit Grown
No. of Acres 50-53

Car Shortage Injures Apple Growers

By THE EDITOR

DURING the current apple marketing season nearly every section of the Northwest has been hit at some time by a serious shortage of cars necessary to handle the crop. This is not a new situation, but is none the less aggravating to growers and shippers, because they had been through the same experience before.

Early in October a very serious shortage of refrigerator cars was experienced in the Wenatchee district. Several of the leading warehouses stopped receiving apples, while in others the crop was piled to the roof. Reports classed the situation as unparalleled for so early in the season, as less than 10 per cent of the crop had been handled up to that time.

Shippers charged that though the Great Northern railroad had been offered several thousand empty refrigerator cars before the beginning of the season, it had turned down the offer rather than pay the per diem rental to owners of the cars. The shippers talked of damages running into millions of dollars.

The Wenatchee Valley Traffic association promptly took up the matter by authorizing employment of a firm of attorneys of national reputation to look into aspects of the American Railway association car pool and frame action for damages. A representative was sent before the interstate commerce commission and other steps were taken to break the shortage and minimize resultant losses.

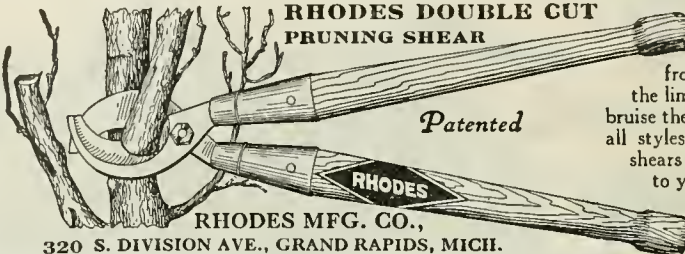
At the same time reports from the Payette valley, in Idaho, showed that there were 400 cars of Jonathans and other apples there ready to be shipped, with no cars available.

About the third week in October it was reported from Salem that acute car shortages existed in most of the apple growing districts of Oregon. Appeals were con-

stantly reaching the public service commission calling for any possible relief. The commission sent letters immediately to the various lines serving both Oregon and Washington territory, calling attention to

the complaints and urging utmost co-operation in meeting the shippers' needs.

It is a little early to know what relief, if any, the railroads may succeed in providing. Whatever they may accomplish, however, it is certain that the apple growers of the Northwest will have suffered extensive losses because of the shortage.



RHODES DOUBLE CUT PRUNING SHEAR

Patented

RHODES MFG. CO.,
320 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.

Ridley, Houlding & Co.

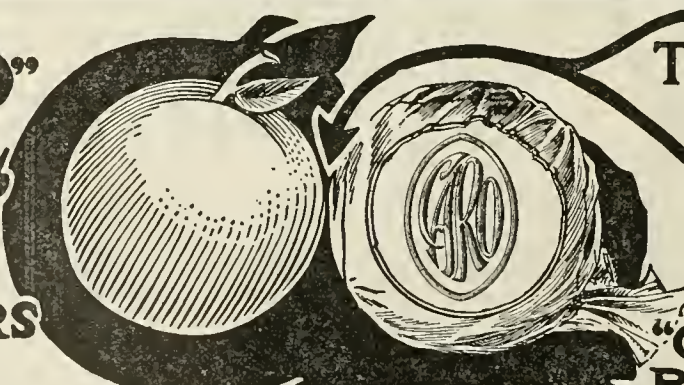
COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy



"CARO" fruit WRAPPERS

This is the **POINT**

"CARO" PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure. The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Seattle Fruit Show

THE premium list of the Pacific Northwest Fruit Exposition, to be held at the Bell street terminal in Seattle, November 21-26, is being distributed to fruit growers of the northwestern states. Entries for district display contests are announced as having closed October 15. For the 10-box contest entries will close November 10, and for plate exhibits on November 19.

For the district or community display, the first prize is \$1,000 and a gold banner; second prize, \$500 and a silver banner; third, \$100 and a silver cup; fourth, \$100 and silver cup; fifth, \$100 and a suitable trophy. For this class of exhibits will be allowed 400 square feet of free space. Entries have closed.

The best display by an individual grower, for which 200 feet of free space is allowed, will be given a \$500 merchandise prize. Entries closed November 1.

The one-box prizes are \$3, \$2 and \$1. The five-box prizes are \$15, \$10 and \$5; the ten-box prizes are \$50, \$30 and \$15. In this contest prizes are provided for 23 varieties of apples in all. Plate exhibits of apples draw prizes of \$2 and \$1.

There are single box and plate contests for 12 varieties of pears, with prizes ranging from \$3 to 50 cents. Prizes are also offered for other kinds of fruits, and for nuts, evaporated fruits, home-processed fruits and cranberries.

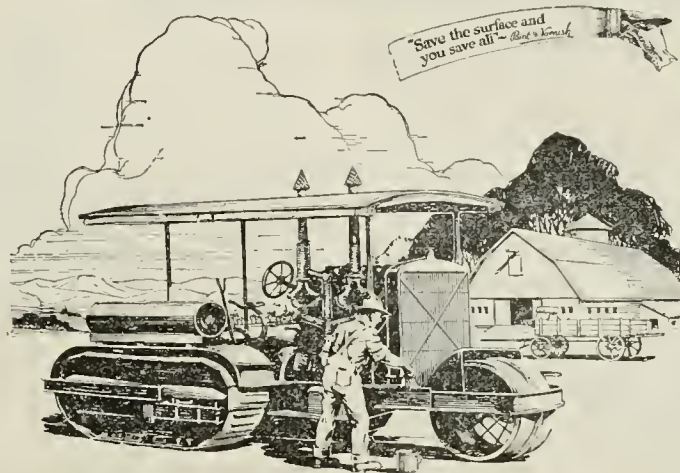
No entry fee is charged for any competitive display, large or small.

Prune Confections

PRUNES, dried and sugared in Strasbourg, France, and on sale at confectionery stores in Germany at 40 marks a pound, are most delicious, according to Dr. F. A. Magruder, associate professor in political science at the Oregon Agricultural college, who, accompanied by Mrs. Magruder, spent the summer in Europe. The price, equal approximately to 50 cents a pound in American money, is a little high for the German pocketbook at the present time, he says, which keeps the confection from being as popular as it would be at a lower price.

In Oregon, however, Dr. Magruder sees no reason why prunes cannot be made a very popular confection. The European recipe might well be copied, he thinks, and thereby create a much larger demand for the Oregon prune crop.

Figs and prunes boiled separately and served together, and prunes stewed with cinnamon bark, are other ways of preparing the fruit which Dr. Magruder found in Europe and on the boat. He brought a sample of the prune confection back to Oregon Agricultural college and delivered it over to the horticultural department that it might be examined and the advisability of its preparation made known.



Longer Life For Tractors Wagons, Silos and Farm Implements

PROPER paint protection will preserve your farm tractors, vehicles, silos and various agricultural implements and machinery. Such protection is vitally important to you because it is economical.

Constant exposure to all kinds of weather tends to materially deteriorate the usefulness of all farm implements and buildings. A protective coat of good paint will make them last longer, look better.

Buy Good Paint

Always buy the best paint—it is more economical—it costs less in the end.

Good paint is easier to spread

and so goes farther. Besides it lasts five or more years longer than cheap paint, and always looks better.

So when you figure labor, square yards covered, lasting qualities and appearance, cheap paint is a great deal more expensive than good paint. It pays to invest in quality, when quality means economy.

Remember that Fuller makes a "special paint for every purpose." No matter what you have that needs painting there is a Fuller product made to cover it.



Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Point
Wagon Paint - Rubber Cement Floor Paint

Manufactured by W. P. Fuller & Co., San Francisco

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and
PIONEER WHITE LEAD for 72 Years

Branches in 16 cities in the West--Dealers everywhere--Established 1849

Send Coupon For Interesting Book FREE

Mail coupon for "Save the Surface"—a free book that tells of the importance of good paint.

We'll send also our booklet describing Fuller's Specification Farm Paints, Varnishes, etc. Send coupon now. Find out what good paint means to you

W. P. Fuller & Co.
Dept. F. 19, San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your booklet of farm paints and varnishes.

Name.....

Street.....

City.....State.....

Success With Evergreen Blackberries

ON HIS farm on the Pacific Highway, just outside of Gervais, Oregon, Sam Brown has 35 acres of evergreen blackberries which were planted from tips in November, 1916. In 1919 the crop amounted to 15 tons. In 1920 the crop was very light because of frost. This year Mr. Brown harvested 125 tons and he is confident that when his yard comes into full bearing he will obtain a yield of 200 tons a year.

Recounting his experience with the evergreens to *The Salem Statesman*, Mr. Brown said that, contrary to general opinion, they are hard to start. It is as difficult to start them as it is to kill them when thoroughly started. He advises the beginner to use tips for planting and not suckers.

Then cultivate each year, just the same as loganberries. The only difference is in the trellising. Evergreens will respond as well as or better than logans.

He planted in rows eight feet apart and 16 feet apart in the rows. The posts ought to be four feet three inches high. He made his a little higher, but he is going to hammer them down, because posts higher than that make the top wire so high that the picking is difficult by women and children. Reaching too high tires them and retards the work.

There are four wires for evergreens, the top wire No. 10 and the bottom wire No. 12, and the wires are 12 inches apart. He uses cross-arms and small slats one by one and five-eighths inches, notched for the wires. The vines lay over one slat and under the next.

MR. BROWN uses tractors in cultivating. He has two tractors. Each tractor pulls a plow and two discs, the discs following the plow—the cultivating being done all at one operation. The ground should be smooth. Do not hill up. The hilling up will make the evergreens as well as the logans crawl up to meet the hilling. Forces were at work in the evergreen vineyard of Mr. Brown, last month, cutting away the old vines, which will be burned, and getting ready to train the new canes that will bear the berries next year.

Mr. Brown has 85 acres of loganberries. He has also a young filbert orchard of 35 acres, and he is going into walnuts, gradually. So he knows what he is talking about when he says it is more expensive to start an evergreen than a logan yard. It takes more wires and larger and more expensive wires. The evergreens are very heavy, and require strong wires. Then it takes longer for the evergreens to come into full bearing. A good sized crop may be taken from loganberry vines the third year, while not a great deal may be expected in the way of profitable yields from evergreen vines till the fifth year.

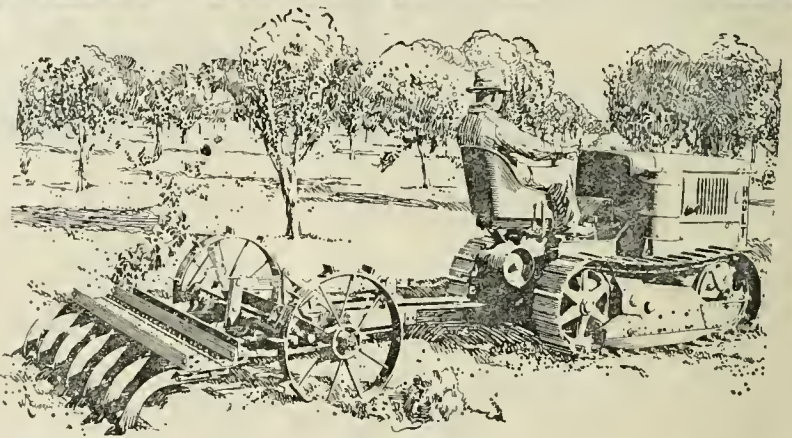
This means more preliminary labor cost, and rent or tax cost and interest cost.

But the evergreens, under favorable conditions, yield more than logans. The reader will observe that Mr. Brown is expecting about 12,000 pounds to the acre from his evergreens annually. Some evergreen vines have yielded over 16,000 pounds to the acre. Some small yards did this year in the Salem district. Yields run up to 22,000 pounds an acre on beaverdam land.

Loganberries and evergreen blackberries make good succession crops. The picking of the logans is done and out of the way

when the evergreen harvesting starts. Mr. Brown started his loganberry pickers June 27. He finished the blackberry picking Saturday night, September 17, getting 225 tons of loganberries and 125 tons of evergreens. He has two trucks, and he helps his neighbors deliver their crops. His trucks hauled to market during the season about 700 tons of berries, half his own and half for his neighbors.

Mr. Brown has about 200 pickers during the loganberry harvest and 100 during evergreen blackberry harvest; part of the same crew, just moving from one yard to the other. The season is longer for picking evergreens than logans. He keeps five steady men the year through, and six extra men during the summer.



At last—the supreme Small Tractor

CATERPILLAR

Reg. U.S. Pat. Off.

T-35 Tractor

Ready for Delivery

November 1

Deliveries of the T-35 model begin November 1. Limitations of production make it advisable to book your orders at once, even if you do not want immediate delivery.

FOR four years Holt experience and skill have been devoted to the production of this wonderful little tractor. During that time Holt has designed, built and discarded small tractor models that surpassed existing standards, but fell short of the high ideal Holt had set for a small "Caterpillar" Tractor.

To limit size without sacrificing power; to lessen weight without imperiling strength; to maintain, above all, the Holt standard of economical, dependable, long-lived performance—that was the Holt ideal. Correct design and the development of new qualities of steels and better methods of heat-treatment made this achievement possible.

Model T 35 "Caterpillar" Tractor is new, but new to the public only. It has been tried, tested and proven. It possesses, in fullest degree, all those qualities that have made the name "Caterpillar" supreme in the tractor world.

"Caterpillar" T 35 Tractor is only 48 inches wide and 52 inches high, weighs but 4000 pounds, yet develops a liberal surplus of power over its 14 drawbar-horsepower rating. It is of marvelously simple design, easy handling, all working parts fully enclosed yet readily accessible.

You will want full information regarding this latest Holt achievement—a post-card or letter request brings it to you—write today.

The Holt Manufacturing Company

Stockton, Cal.

Peoria, Ill.

Los Angeles, Cal.

San Francisco, Cal.

Spokane, Wash.



Six of his men have been with him six years and one man eight years. They know how to go ahead with the work, and there is something doing every day in the year.

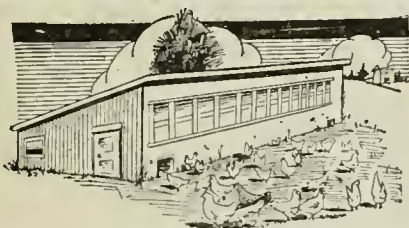
THE Brown farm is the old home place. His is a case of the younger generation sticking with the old farm and developing it into greater productiveness. A couple of years ago Mr. Brown was offered \$750 an acre for part of his loganberry vineyard. He refused the offer. It has been said that the farm, in the early settlement of Oregon, was sold for the price of a Hudson's Bay shotgun. But shotguns were high in those days, and land for preemption was plentiful—and loganberries and evergreen blackberries were unknown.

Mr. Brown has a neighbor, Joe Nibler, the pioneer in the cultivation of evergreen blackberries—at least the pioneer in the Gervais neighborhood. Their cultivation is a new thing. Mr. Brown got the evergreen blackberry "bug" from his neighbor, Joe Nibler. Picking from the trained and cultivated vines is easier and cheaper. The berries are better. They sell higher 1 to 2 cents a pound higher. They have become the great pie berry of America, and there is no telling how big is their future.

Thank You!

"I could not afford to do without Better Fruit any more than I could do without my sprayer. They are both specialists in their respective callings."

—Excerpt from letter of J. R. Allen, Neppel, Wash.



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

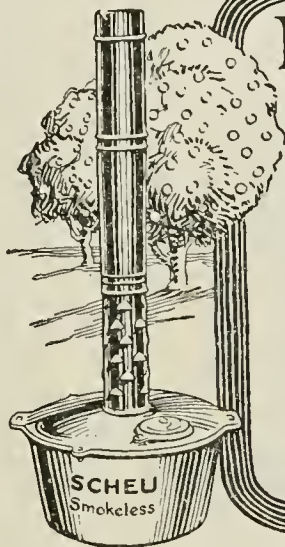
20 in. wide by 25 in. high, 80¢
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899



Frost Insurance

\$1.15 per hour per acre

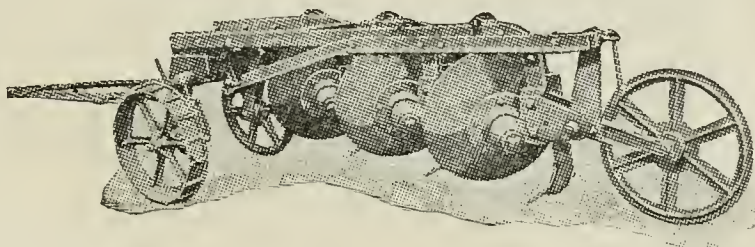
"Used 27 Scheu Heaters to acre on the night of April 25, 1921—temperature outside of orchard 23° raised to 30° and 31° inside. I have a full crop in area covered by the heaters," writes W. C. Stone, Prop. Squaw Butte Orchards, Emmett, Idaho.

Scheu Smokeless and Canco Heaters

Give positive protection. Operating cost \$1.15 per acre per hour. Temperature as low as 16° successfully raised above danger point. Used by growers the country over. More than a million Scheu and Canco heaters now in use. Heaters cost 36¢ up. Order early to get frost protection next spring.

Write for free 48 page book—"Frost Insurance." Resident agents wanted.

Orchard Heater Dept. C
WHITING-MEAD COM'L. CO., LOS ANGELES



The New McKay Disc Orchard Plow

Here is the latest and most improved development of the disc plow and subsoiler combined. It has been designed and built to embody every improvement. Its ease of handling and its greater adaptability to every condition of orchard, grove, vineyard or open field tillage are outstanding points that insure its increased utility.

THE ORCHARD PLOW AND SUBSOILER OF GREATEST UTILITY AND PROFIT

The McKay disc plow has been thoroughly tested under most difficult conditions.

The patented hitch permits plowing close to trees, throwing soil either direction. Front and rear discs cut outside of wheels, thus allowing closest plowing to and from trees and vines. Greatest offset without side draft on tractor. Built low and sturdy, the plow will work under trees without injury to branches or fruit. No projections of any kind above the beams.

The new McKay pulls straight on centers with no side thrust.

It is simple in construction, has but few parts—most of which are steel—and is noted for its unusual strength and endurance. There are no chains, sprockets, levers or gears. The patented power lift is sure and simple.

Attached subsoilers behind each disc break up the hard pan, but may be adjusted out of the way when desired. Greater clearance above and between discs permits turning of heavy cover crops. Full Timken bearings in all wheels and discs. Pivotal front truck allows tractor and plow to turn on narrowest headlands without straining beams.

TOWERS & SULLIVAN MFG. CO.
ROME, GEORGIA

Distributors for the Pacific Coast

R. M. Wade Co.
Portland, Oregon

H. V. Carter Motor Co.
San Francisco, Cal.

Arnott & Co.
Los Angeles, Cal.

Full descriptive circular and additional information sent upon request. Write to the distributor nearest you.

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

W. H. WALTON..... Editor
JERROLD OWEN..... Associate Editor
C. I. MOODY..... Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York
JNO. D. ROSS.....608 Otis Bldg., Chicago
SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00, payable in American exchange.
Advertising Rates on Application.

Profiteering Traced

Early in October a party of Chicago aldermen visited cities of the Pacific Coast, on trail of the elusive profiteer.

No, the Windy City investigators came not here expecting to shake an accusing finger at any suspected group of Western citizens. Their suspicions pointed in an entirely different direction. They came fully expecting their investigation to fix the guilt of profiteering in market produce upon other parties. It did.

The 28 visitors were members of Chicago's committee on high costs and high rentals. For months they have been waging an active campaign for reduction in food costs and rentals. In their fight for lower food costs they of necessity had made a study of marketing practices. They had analyzed costs at the consumer end of the line. They came to Washington, Oregon and California to round out their study by getting the producer angle, more particularly in the fruit industry.

What these men learned from their investigation out here served only to confirm facts and convictions they already held. Promptly

and frankly they declared that the fruit growers are not profiteering. Russell J. Poole, able and aggressive secretary of the commission, publicly stated that the growers are in no way to blame for the high cost of their fruits in Chicago.

The railroads may be getting a bit more than entitled to for hauling the fruit East, Mr. Poole opined, but the real charge of profiteering he fastened upon the brokers and commission men. It is not an uncommon practice for these middlemen to withhold fruit from sale that prices may be pushed up. Sometimes it is held until it rots. Again, it is no uncommon occurrence, he said, for a car of Hood River or Wenatchee apples to be sold and resold five and six times during its journey to Chicago.

By these findings the stigma of profiteering, at least of unduly forcing up costs, seems rather definitely placed. Some Chicagoans pay the extra cost, others do without the fruit. In both instances the guiltless Pacific Coast growers suffer injury. In spirit and in hope for a change in the system, these growers back Chicago in her fight for lower costs through more direct distribution.

Car Shortage

Again this season, as has universally been the case when heavy fruit crops have been grown, shippers of the Pacific Coast section have been confronted at the height of the shipping movement by an apparent inability on the part of the railroads to supply sufficient cars.

For months the railroads had been begging for tonnage. Business was so slack most of them were not making expenses. Such was their plight it had the dear public on the verge of shedding tears of sympathy.

A few weeks pass and some of these same railroads are declining business on the ground that they are unable to handle it. The old excuses are revived—not enough refrigerator cars, too many required to move the grapes of California, or the cabbages of Michigan, or the potatoes of Texas.

In the past there hasn't been very much the unfortunate shippers could do in this situation. There isn't a great deal more they can do now, but one helpful course presents itself. They can throw as much as possible of their tonnage to the competing water lines. Some steamship companies have become energetic enough to fit many of their boats with refrigerator space. More of them will gladly do so if the requisite cargo is made available. Fruit shippers will do well to encourage them.

One thing more will go far toward putting the steamship companies in position to take a larger share of the Coast's fruit shipments—free tolls for coastwise shipping through the Panama canal. It would be interesting to know how many men of the western fruit industry have written or telegraphed their representatives in Congress asking them to work for the free toll measure.

Benefits of Displays

Who in your community won the prizes for best horticultural displays at the fairs of your section—yourself or your neighbor? It is a bit late to contemplate the fact that you may have made no showing of your fruits, or may not have done them justice in scope or attractiveness of displays. If such reflections are yours, perk up—there is still opportunity to gain credit for yourself and your community by entering exhibits at the big Northwest Fruit Exposition at Seattle and the Land Products Show at Portland.

In thinking of such exhibits do not forget the variety of benefits that accrue. If you do creditably there is a direct reflex benefit for your community. There comes a stimulating encouragement for your own advancement in the fruit growing industry. You will have done something to help give favorable impressions to visitors from other states and sections of our country. Neither least nor last in the category, you will have done something to stimulate the fruit-consuming appetites of the general

Experience Letter Prizes

WE WISH every fruit grower who reads this would take note of the fact that the January number of *Better Fruit* is to be a big comprehensive "Homeseekers' Number." It is to be of such nature as to make a definite and effective appeal to the thousands of persons in the Middle West and East susceptible to the lure of the fruit growing sections of the Pacific Coast.

No one thing gives the Easterner more exact information and makes more cogent appeal to him than the plain, unvarnished story of what the individual fruit grower has experienced and accomplished here. That the "Homeseekers' Number" may carry an extensive array of such articles, straight from the growers themselves, we are offering prizes for acceptable "experience letters."

For the most interesting and informative letter *Better Fruit* will give the writer \$10 in cash. For the next best letter, \$5 in cash will reward the writer. Prizes consisting of two-year and one-year subscriptions will reward others whose letters are used in this number. Subscriptions will be credited as renewals or sent to any new address, as the winner may request.

Sit down and write us in your own way of your experiences in growing fruits, berries or nuts of any sort. Tell what you have accomplished in this line whether on a city lot or 100-acre ranch. Besides the possibility of receiving a cash prize you will be doing your bit toward influencing new settlers to come to the Pacific Coast states.

Old friends back East would enjoy reading your letter among the contents of this number. Send it in promptly and if it is among those printed you will be mailed two to five extra copies—just to show our appreciation.

FREDERICK PAGE, prominent New York city builder, has purchased ten acres of bearing orchard in the Belmont district at Hood River and has moved his family there. Previously he had an orchard at Mosier, Oregon. He sold this before making the purchase near Hood River.

LEWISTON VALLEY WATER CO.
Lewiston Orchards

Lewiston, Idaho
June 21, 1921

Better Fruit Publishing Co.
Portland, Oregon
Gentlemen:—

I have before me the June copy of *Better Fruit*. I wish that every fruit grower in the Northwest could read this issue.

You will find inclosed a list of the fruit growers on the Lewiston Orchards. I hope you will be able to mail each one a copy of the June number. This one issue is worth many dollars to any fruit grower.

Yours truly,

(Signed) David S. Wallace, Manager



Give Your Orchards a Tonic!

FRUIT TREES, like persons, cannot grow without nourishing food. Their food area is limited by root extension. When the soil is sapped of its nourishment, the trees starve to death.

By Blasting the Soil with



DYNAMITE

the soil is deeply pulverized and aerated and greater root extension is ensured. Moisture is easily absorbed and retained for periods of drouth.

Old Orchards can be rejuvenated by firing small charges of Du Pont Dynamite in the soil below the tips of the branches. This blasting operation is the tonic required to restore old trees to a productive and profitable condition. New trees planted in dynamited ground develop better root systems, grow faster and yield more and better fruit.

Du Pont Dynamite was the first explosive made for tree-planting, land-clearing and ditching. Always uniform in its results, it is the most efficient and economical powder to use. Get it from your hardware dealer or general store.

Write for a free copy of Farmers' Handbook of Explosives telling how to rejuvenate orchards, blast tree-holes and clear and drain land.

E. I. du Pont de Nemours & Co., Inc.

PORTLAND

SEATTLE

SPokane

Musical
Merchandise

Write
Us

WE SAVE YOU MONEY!

W. Martius Music House, Inc.

1009 First Avenue, Seattle, Washington
Everything Known in Music

SHEET
MUSIC

Write
Us

Are You Reading the Advertisements?

If you are not you should be for there are many new devices coming into the market all the time, some of which may help you solve your biggest problems.

Need of Commercial Fertilizers in Bitter Root Valley

By EDMUND BURKE

Chemist, Bozeman Agricultural Experiment Station

THE first soil investigations made by the Montana Experiment Station were in 1897 when the origin and extent of alkali salts were studied. The first work done in the Bitter Root valley was in 1899 and confined entirely to the bottom land where alkali salts would be liable to be found in the largest quantities.

At the time this investigation was started, only the most fertile land in the state was under cultivation and with the exception of excessive amounts of alkali in a few localities, all lands were producing such large yields of grains and grasses that no one even dreamed of our soils being lacking in any of the elements essential to plant growth.

With the advent of dry farming and the rapid settlement of our government lands, a considerable portion of our grazing lands was settled and put under cultivation, some as dry land and, in some cases, irrigation projects were developed and the lands irrigated, but even up to this time, the farmer, and even the scientist, were prone to believe that any of this newly acquired land was lacking in plant foods and continued to hold to the idea that all Montana soils were unusually rich in all of the elements essential to plant life and would produce bumper crops under proper methods of cropping and tilling when well supplied with moisture.

About 1910 and 1911, soon after the rapid extension of our farming land, the soil work of the experiment station was extended to include a study of the nitrogen, phosphorus and lime content of the soils. It soon became evident that some of our soils were lacking in nitrogen, the plant food element most closely associated with organic matter. The scarcity of nitrogen is not confined to any particular locality in Montana, neither is it confined to this state for the same condition prevails in many sections of the semi-arid region of the West. Aside from differences in soil types, rainfall is the controlling factor in the accumulation of nitrogen in the soil. Where the rainfall is light, there will be a light growth of vegetation and consequently a slow accumulation of nitrogen. In humid countries, there is a danger of the nitrogen being leached from the soil. This loss, however, seldom equals in amount that which fails to form in semi-arid countries.

Phosphorus is not of organic origin and therefore the per cent present in a virgin soil is not influenced by precipitation like nitrogen. Some soils contain much more phosphorus than others, but it must be borne in mind that that condition is brought about largely by geological activities. Near Philipsburg there is phosphate rock analyzing 10 per cent phosphorus, while some of our soils in the state will not analyze more than

0.02 per cent. The lime in a soil is slowly leached to greater depths by rain water and irrigation and where other conditions are equal, there is more lime in regions of light rainfall than in humid countries.

So much for the pioneer work of the station and the factors which influence plant foods of the soil. This discussion may

seem somewhat technical, but I believe the time is coming, if not already here, when we must devote more time to a study of the plant food in a soil and the feeding habits of plants. The farmer is careful to balance his horses' rations so that they are able to do a maximum amount of work or his cows' rations so that they will give a maximum



You'll get somewhere with a pipe and P. A.!

Start fresh all over again at the beginning! Get a pipe!—and forget every smoke experience you ever had that spilled the beans! For a jimmy pipe, packed brimful with Prince Albert, will trim any degree of smokejoy you ever registered! It's a revelation!

Put a pin in here! Prince Albert can't bite your tongue or parch your throat. Both are cut out by our exclusive patented process. So, just pass up any old idea you may have stored away that you can't smoke a pipe! You can if it's P. A. for packing!

What P. A. hands you in a pipe it will duplicate in a home-made cigarette! P. A.'s a cinch to roll because it's crimp cut and stays put!

Prince Albert is sold in tippy red bogs; tidy red tins, handsome pound and half pound tin humidors and in the pound crystal gloss humidor with sponge moistener top.



Copyright 1921 by
R. J. Reynolds
Tobacco Co.
Winston-Salem, N. C.

PRINCE ALBERT

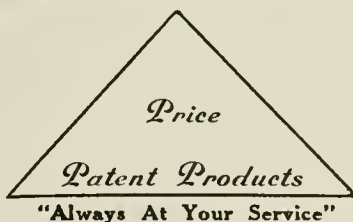
the national joy smoke

milk flow. Every farmer knows the general methods of feeding stock. He also knows that well fed and well groomed animals are more resistant to diseases and the attacks less fatal to them than to animals suffering from malnutrition or starvation.

WITH animals, the farmer can see the quality and quantity of food that they are consuming and note its effects. This makes the problem of feeding stock more simple than the problem of feeding plants. The plant, be it grass, grain or tree, requires a balanced ration in order to obtain its maximum growth and its resistance to disease just the same as stock and not until the farmer learns to feed his plants will he get the greatest returns for the money expended. In feeding plants, we are dealing with elements existing in the soil in small quantities and invisible to the eye. It is therefore impossible for the farmer to tell if the plant is receiving its proper ration except by its appearance and rate of growth.

A plant, properly fed, will make a normal growth, its leaves will be of normal size, of a good green color and its power to reproduce seed or fruit will be at a maximum. The feeding habits of different species of plants differ the same as different species of animals. One species may require more lime, nitrogen, phosphorus or potash than some other species just the same as a hog requires a greater proportion of grain to roughage than a sheep, horse or cow. Water is as important for growing plants as for animals and where irrigation is possible, no plant should be allowed to suffer for water. Where irrigation is not possible, the greatest care should be exercised to conserve that which comes as rain or snow, so that the plant will receive the most possible.

While different species of plants may differ in their feeding habits, it must be remembered that the functions of the plant foods do not differ in different species. For example, nitrogen's chief purpose in all species of plant is in leaf formation and the production of proteins and nitrogenous bodies, potash in building up the carbohydrates and cell structure and phosphates in producing seed and fruit. In discussing plant foods, it must be remembered that



Growers' and Packers' Equipment

We Manufacture:

- LADDERS
- BOX PRESSES
- PACKING CHAIRS
- BOX-MAKING BENCHES and
- AUTOMATIC ELEVATORS all
- GRAVITY & POWER CONVEYOR kinds
- POTATO GRADERS AND SIZERS of
- PRICE FRUIT SORTERS AND SIZERS Special
- NELSON FRUIT SORTERS AND SIZERS Equipment

PRICE "PRICE PRODUCTS" Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse.

Illustrated Booklets and Price List on Request

Fruit Appliance Company

Successors to

Price Manufacturing Company, Inc.

YAKIMA, WASHINGTON

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

there are several others than those mentioned and probably just as essential, but the soil, in general, is well supplied with them so we will interest ourselves only with those that are liable to be lacking.

The analysis of soil in the Bitter Root valley shows a wide range in the per cent of plant foods present, so much so, that one orchardist living on the east side of the river would not be justified in applying lime to his soil because some neighbor of his on the west side had been benefited by its use. Neither would an orchardist living on either side of the river be entirely justified in increasing the nitrogen and phosphorus content of his soil simply because his neighbor's orchard had been benefited by the application of these fertilizers.

THE chances are, however, that if one orchard is benefited by a certain treatment that some other orchards in the same vicinity should be benefited by a like treatment and is worthy of trial. The experiment should not, however, involve any considerable expense, but rather carried on a small scale until definite results are obtained. The logical thing for all orchardists is to determine by chemical analysis and fertilizer experiments the feeding power of their soils. The experiment station will gladly co-operate with the fruit growers by analyzing their soils and advise the proper fertilizer to use. From this point on the orchardist, by the aid of the county agents, should be able to apply the remedies recommended by the station and note the results obtained.

Mention has already been made of a lack of nitrogen, phosphorus or lime in some of our Montana soils. The Bitter Root valley, while blessed with a delightful climate and some of the most fertile soil in the state, is no exception, for here we find some soil, the fertility of which can be greatly improved by the application of fertilizers. The fertilizer most needed is nitrogen and fortunately, this can be supplied by growing leguminous crops and plowing them under. The one danger encountered by this method is the attempt to grow two crops on land that can ill afford to produce one and as the legumes are harder nitrogen feeders than fruit trees, no beneficial results can be looked for until one or more crops have been plowed under and the organic matter humified.

It might be well in the case of bearing fruit trees to use some nitrogenous fertilizer when growing the first and even the second crop of legumes and especially so if growing clover or alfalfa. When peas are to be used to increase the nitrogen in the soil, they can be sowed late in the spring so that the trees can do most of their feeding before the peas begin to take up much plant food from the soil. Barnyard manure is also a means of supplying nitrogen and should be applied to orchards when possible:

There are a few locations in the Bitter Root valley where the soils should be im-

proved by the application of lime. The only way to supply this element is by adding ground limestone upon the degree of acidity of the soil. Unfortunately, there is no chemical means of determining the exact degree of acidity of a soil or the exact amount of lime to add to obtain maximum results. When a soil is known to be acid, it is always best to determine the amount to add by experimenting with varying amounts to see which gives the best results.

Phosphorus, another element which is possibly lacking in some of the soils of the Bitter Root valley, may be added in the form of ground phosphate rock or the superphosphate. Where quick results are desirable, it is readily taken up by the trees or plant.

The phosphorus in the ground phosphate

rock is slightly soluble and its availability is therefore brought about largely through bacterial action in the soil. This form should prove most beneficial to young orchards where the growth of the trees alone is to be considered. Bearing trees, suffering from the lack of phosphorus, should have the phosphorus added in a form more readily available. For experimental purposes, the superphosphate should be added at the rate of from 400 to 800 pounds per acre.

In conclusion, permit me to say that some, probably not all of the orchardists of the Bitter Root valley, will have to use more care in maintaining the fertility of their soils, that the use of fertilizers must be encouraged and that the general trend should be a building up of soil fertility rather than a rapid depletion like that practiced at one time by clean cultivation.

MYERS SPRAY PUMPS

The inestimable value of spraying has again been demonstrated this year. While some localities report smaller crops of fruits and vegetables than usual, the quality has invariably been far above the average thus balancing the shortage in production.

This indicates that whether the yield be an abundant or small one there is always a ready sale for choice fruits—and choice fruits can no longer be grown without resorting to the protection afforded through spraying.

MYERS SPRAY PUMPS, NOZZLES and ACCESSORIES have long been assisting fruit growers, farmers, gardeners and others in their fight against plant and tree enemies. Economical, practical, reliable and fully proven, with styles to meet all spraying requirements, no matter how large or small your orchard or vineyard, there is a guaranteed Myers Spray Pump that will exactly fit your needs, and the price will be as low or lower than many of the light weight, poorly constructed and cheaply equipped outfits now on the market.

Call on the Myers Dealer in your locality or write us direct when ready to purchase. Send for a copy of our late catalog today—it's free and a postal will bring it to your door.

FOR SPRAYING, PAINTING, WHITEWASHING AND DISINFECTING.

CATALOG FREE ON REQUEST

THE F.E. MYERS & BRO. CO.
135 ORANGE ST. ASHLAND, OHIO.

MANUFACTURERS OF PUMPS FOR EVERY PURPOSE—HAY UNLOADING TOOLS AND DOOR HANGERS

Pacific Northwest Distributors *Mitchell* Lewis & Staver Co. Spokane, Wash. Portland, Oregon

— BUY FROM THE LOCAL MITCHELL DEALER

Marketing News of Interest

APPLE shipments in the United States have in recent days been amounting from 1100 to about 1500 carloads daily, according to reports of the United States Bureau of Markets. For instance, on October 17 the total was given as 1484 cars; on October 18, as 1222 cars, and on October 19, as 1132 cars. Up to October 18 the grand total for the United States, according to report of the Spokane branch of the bureau, had reached 35,088 carloads, as compared with 35,381 carloads by the same date in 1921.

Typical of the way apples have been moving of late in Northwestern states are these figures of the bureau on daily carlot shipments: October 18—California, 35; Idaho, 129; Montana, 10; Oregon, 54; Washington, 515. October 19—California, 47; Idaho, 81; Montana, 23; Oregon, 101; Washington, 389.

▲ ▲ ▲

SLOWING down of the apple market was reported from many points the third week in October. Because of heavy movements, in part due to possibility of a tieup of the railroads in the threatened strike and in part due to desire of the growers to realize on their crops as quickly as possible, a continuation of rather heavy markets into this month is probable.

The Spokane bureau report of October 18 was this: Carloads f. o. b. usual terms. Few sales reported. Wenatchee valley, no sales reported except on rollers. Yakima valley Jonathans, 10 per cent 5 tr., XF, \$1.90; fancy, \$1.65; Winesaps, XF small, \$1.65; Romes, XF large, \$1.85 to \$2. Other districts, too few sales reported to quote.

▲ ▲ ▲

CALIFORNIA apple growers are not experiencing anything like a satisfactory deal, but this situation will be temporary, in the opinion of San Francisco dealers, who expect conditions to show marked improvement in the near future.

The movement of California apples is extremely slow. Light demand is indicated by the rapidity with which stocks are piling up in the ice houses. Holdings in storage in San Francisco increased almost 34,000 boxes during the second week of October. Current holdings are far in excess of those reported at this time last year, amounting to 117,943 boxes, as compared with but 19,087.

The first straight carloads of new crop Spitzenberg apples of the season were received in San Francisco from the Hood River district of Oregon October 14 and sales were reported at \$2.50 to \$2.75 per box.

▲ ▲ ▲

HEAVY shipments of apples have been made from Oregon the past three weeks to canneries and cider manufacturers of the Mid-West and further liberal movement of apples falling below the "C" grade are expected. Average prices quoted f. o. b. Columbia river points have been \$12 for those falling below the "C" grade, while strictly cider apples, including poorest stock available, have been bringing \$6. Reports are to the effect that buyers of the better grade of culls have been selecting the best from their lots, boxing them and selling them to large retailers at 80 cents to \$1 a box.

▲ ▲ ▲

FRANK HARKNESS of Spokane is authority for the statement that European and foreign markets are this year taking twice the amount of apples sent them last season. Refrigerator space on out-bound boats has been easy to get, he said, but shipments were interfered with by inability to obtain cars in which to transport the apples to port. He said that first reports received were to the effect that the fruit is reaching the European markets in excellent condition.

IN an effort to fill early orders for prunes as soon as possible, the Oregon Growers' Co-operative Association reported October 15 that it was packing in all of the prune growing districts. The plants at Salem, Dallas, Riddle, Myrtle Creek, Yamhill and Creswell were working at top speed in an effort to get out 15 carloads during the week. First shipments had already gone forward. They embraced 12 cars, eight of which were for export to Canada and England.

▲ ▲ ▲

THE California Prune and Apricot Association, which controls 87 per cent of the California prune crop, early reported that it had sold out of its crop all 20's, 30's, 90's and 120's. The remainder of the association's crop is listed as follows: 27 per cent 40's, 20 per cent 50's and 60's, 10 per cent 70's and 5 per cent 80's.

▲ ▲ ▲

EIGHTEEN cars of British Columbia apples were shipped about October 10 from Vancouver to Australia as the first of such shipments for the season. The apples were 80 per cent Jonathans and the remainder McIntosh Reds.

▲ ▲ ▲

CRANBERRIES from the bogs of Washington and Oregon moved unusually early in carload lots this season. The Pacific Cranberry Exchange shipped carload lots from Washington to points in that state and California as early as the middle of October.

▲ ▲ ▲

ANNOUNCEMENT has been made at Yakima that the Northern Pacific railroad will continue its reduced rates on apples after December 31. The rate of \$1.50 on Western apples to Eastern terminals would thus remain in effect. When the rate was first announced it was to be effective only until the end of the year.

GOVERNMENT reports showed that fruit worm damage in September reduced the Massachusetts cranberry crop to 175,000 barrels, as compared with 280,000 last year. Other government estimates on this crop were: New Jersey, 190,000 barrels; Wisconsin, 23,100 barrels; Washington, 20,160 bushels; Oregon, 8,032 bushels.

TORO BRAND AGRICULTURAL SULPHUR



Improves alkali soil, transforms potash and phosphorous into plant food. Prevents wire worms, smutty grain and potato scab. 220 lbs. per acre has increased crops up to 600 per cent.

Write for circulars 6, 7 and 8, price list and samples.

DIAMOND "S" BRAND for Lime-Sulphur Solution. ANCHOR BRAND for dry dusting. CARBON BISULPHIDE for rodent control.

SAN FRANCISCO SULPHUR CO.
624 California Street
San Francisco, California

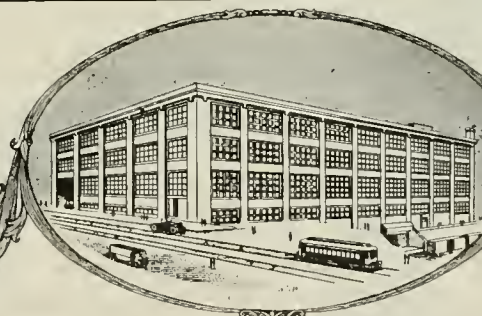
Apples, Pears, Peaches Potatoes, Onions

and all kinds of Fruit and Produce Bought for Cash..

Address us as to what you have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.



F. C. Stettler Mfg Co.

Portland - Oregon

Lithographers

Color Printers

Labels

Cartons

Folding Boxes

Cut Outs

Display Cards

Special Advertising

Stiff Boxes Plain and Fancy

Land Show Premiums

OFFICIALS of the Land Products Show, to be held in connection with the Pacific International Exposition in Portland, November 5 to 12, have arranged an attractive list of premiums on apples and pears that should attract many displays by growers of the Northwest. It is announced that all exhibits winning first prizes are to become the property of the Land Products Show management.

These premiums on apples are announced:

Twenty-five box display, commercial pack, one or more varieties: First \$150, second \$75.

Five-box display, commercial pack, one or more varieties: First \$50, second \$25.

One-box display, Newtowns, Spitzenbergs, Winter Banana, Rome Beauty, Wine-sap, Grimes Golden, Delicious, Arkansas Black, Ortley and Jonathan: First prize,

\$10 each variety; second prize, \$5 each variety.

On pears the premiums are these:

Best display, five one-half boxes, commercial pack, all varieties: First \$35, second \$15.

Loganberry growers should put the canes upon the trellises before the winter rainy season if tip dieback is to be prevented. Although a very severe winter might injure the canes to some extent, investigations conducted this year by the

Oregon Agricultural College Experiment Station show that the yearly loss due to dieback exceeds in importance the possibility of another exceptional winter. As soon as tied up they should be sprayed with Bordeaux 4-4-50 to protect against fungi, especially the bases of the canes.

ANNOUNCEMENT is made by the State College of Washington, at Pullman, that a strong course in the marketing of farm products will be given as a feature of its short course in agriculture, January 2 to February 24.



RELIABLE NURSERY PRODUCTS

Large assortment of the best varieties in Fruit and Nut Trees, Small Fruits, Shade and Ornamental Trees, Shrubby, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department. Planting plans furnished for residence grounds, large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Orenco, Ore.
Opportunities for More Salesmen

No Bruised Fruit

No Stem Punctures

The **"4W"** Picking Bucket

PATENT APPLIED FOR



A heavy galvanized-iron picking bucket with bottom of strong canvas, reinforced at wearing points with chrome leather. Bucket is shaped to fit close to the body. Suspender-style harness distributes load equally on both shoulders and back. Top edge of bucket lower in front by one inch; and is padded with felt, covered with twill webbing sewed to bucket with soft brass wire. Felt pad at back stops bruising in picking operation. Canvas bottoms are fastened to bucket by patented ring which permits instant removal if ever necessary. Hundreds of these buckets will go through two full seasons without changing the original canvas. New bottoms are always available and inexpensive. Fruit is dumped from bucket through canvas bottom—both hands of picker guiding placement and assuring no damage to the finest fruit.

Every "4W" Picking Bucket Sold During the 1921 Season Paid for Itself many Times Over by Eliminating Loss from Bruised and Stem-punctured Apples

Earned \$25 to \$50 Each
Wenatchee, Wash., Oct. 22, 1921
WELLS & WADE,
Wenatchee, Washington.

Gentlemen:
During the 1921 fruit season we purchased and used approximately two hundred fifty of your "4W" Picking Buckets. The bucket has proven a big success in our orchards, practically eliminating stem punctures from our fruit. It would be very hard to induce this organization to go back to the old system of picking with canvas bags.

It is impossible to estimate the saving made by the use of the Wells & Wade Bucket—but I am confident that in our orchards we have been able to market several thousand more boxes of apples because of having used the buckets, than we would have marketed if we had used canvas picking bags.

Very truly yours,

AMERICAN FRUIT GROWERS, INC.

(Signed) By Earl Barnhill,
Regional Supervisor.



"Better Than Bags"
Peshastin, Wash., Oct. 21, 1921.
WELLS & WADE,
Wenatchee, Washington.

Gentlemen:
There were 40,000 boxes of apples picked in "4W" Picking Buckets on this tract this season—and I can say that this bucket has given entire satisfaction. Growers who have used the "bags" in years past have found that at least 15 per cent of the fruit picked in bags have been "culls," from bruises and stem punctures. This is a **HEAVY LOSS** to any grower. After using the "4W" Picking Bucket a full season, I can safely say that I have not had 1 per cent loss in bruised or stem-punctured apples—and this applies equally well to all varieties of tree fruit. Furthermore, I have not had a single apple-picker want to change one of these buckets for a bag.

Yours very truly,

(Signed) **CHARLES LINVILLE,**
Manager Peshastin Orchard,
Peshastin, Washington.

PRICE, \$4.50

SEND FOR SAMPLE BUCKET—NOW!—PLACE ORDERS EARLY

WELLS & WADE

Manufacturers and Distributors
WENATCHEE, WASHINGTON

Stop making **CULLS** out of your Extra Fancy Fruit

Insure Delivery Next Year by **PLACING ORDERS NOW!**

WASHINGTON

DURING the height of the packing season in the Wenatchee district apples have been rolling out at the rate of from 150 to 200 cars a day. The shippers hope to maintain shipments at the rate of 200 cars daily during the first half of November. Even then, it is estimated, there will remain about 8000 cars to be stored, with capacity for only 4000 cars. Consignments by water for Atlantic and European points, forwarded via Seattle, may aid in cutting down the surplus.

THE Valley Fruit company has leased the Luther dehydrating plant at Walla Walla, idle for two years, and will handle cull apples. Manager Frank Shields stated the company was actuated by two things—to make a market for growers' culls and to furnish work for the unemployed. The plant will handle ten tons of green fruit a day. The company is working 185 persons at its packing plant in Walla Walla and 35 in its warehouse on the state line. Its payroll is now \$10,000 a month.

BY-PRODUCTS plants in the vicinity of Yakima are reported as running night and day to take care of cull apples which have piled up in warehouses of the dehydrators and canneries. There are seven such plants at Yakima. In running at capacity this season they will use 15,000 tons of culls and give employment to 800 men and women over a period of four to six months. The price of culls opened at \$10, as announced by the Libby, McNeill & Libby cannery, but later dropped to \$8. At that, several of the plants have refused offerings because unable to handle them.

A RECORD price for apple land for the Okanogan Valley, and probably for all of north central Washington, was said to have been established when Dr. H. B. Clough sold his orchard of 19.2 acres to Oscar C. Erickson for \$35,000, a price of \$1876 an acre. The trees are mostly Johnathans, Winesaps, Stayman and Delicious. Erickson held a four-year lease on the orchard and is reported to

have received \$12,000 for this year's crop, conservatively estimated at more than 6000 boxes.

COMPLAINT was made at Spokane that unemployed men refused 30 cents an hour for apple picking in the Spokane valley when the jobs were listed at the city free employment bureau.

THE harvest festival held in Washougal, October 10, was attended by the Prunarians of Vancouver and members of the Washington Growers' Packing corporation.

IN THE orchard of Mrs. Lucy J. Isaac, at Okanogan, Wash., the first of October, thieves stole more than 250 boxes of Winter Banana apples. The fruit was picked, hauled away, props replaced under the trees and the orchard gone over with a spring-tooth harrow to obliterate the tracks.

A RECORD has been made by the prune orchard of B. O. Case, in the Fruit Valley district, south of Ridgefield, Wash. This five-acre orchard comprises 565 trees, which produced 16 1/3 tons of dried fruit, or 32,667 pounds of prunes. This is an average of about 58 pounds of dried fruit to the tree. The prunes were unusually large, the major portion being 30-40s. Trees in the Case orchard are planted 18 feet apart, which is much closer than the average orchard is set.

TWENTY-FIVE girls, expert apple pickers and packers, were brought to the Spokane district by the Palouse corporation, to handle the 150,000 boxes of apples from the corporation's orchards. It was estimated that the girls would average net earnings ranging from \$150 to \$200.

THE Cherry Hill ranch at Sunnyside, owned by F. K. Spaulding & Son, during the 1921 season produced on 12 acres a record fruit crop. The owners are said to have marketed 45,000 pounds of cherries, 70,000 pounds of pears, 10,000 pounds of plums, 3000 pounds of prunes, 42,000 pounds of peaches and 40,000 pounds of apples.

A new product for the Orchardist

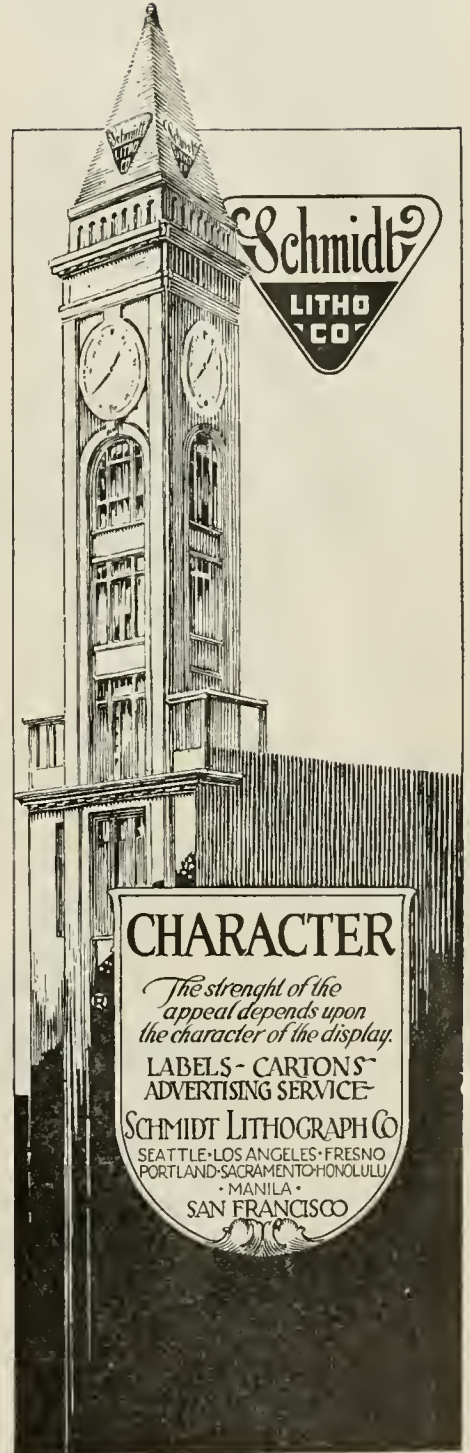


Prepared Casein Spreader
 pronounced superior by Experts
 after complete tests & Efficient
 & Economical & Ask your dealer
 or write to us for circular

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY STREET
 SAN FRANCISCO

740 TERMINAL STREET
 LOS ANGELES



TREES AND SHRUBS

Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
 Toppenish, Washington.
 Salesmen everywhere. More wanted.

APPLE growers in the Spokane Valley report considerable damage done to the crop by the heavy winds of the last week in September. Special damage was done to the Rome Beauty crop. Reports secured by H. M. Dexter, traffic manager of the Spokane Fruit Growers' Company placed the crop damage at from 20 to 30 per cent. Wagners escaped with the slightest damage, it was stated, two-thirds of that variety having been harvested.

ON completion of the prune harvest of Clarke county the yield was placed at about 2,000,000 pounds, the crop being much lighter than that of last year. In spite of this, it is said the growers are realizing much more on this year's crop, as prices are higher and labor costs have been considerably less than last season. It is estimated that the labor costs were cut nearly 50 per cent. Part of this year's crop will sell for 18 cents per pound, or a premium of 6 cents because of the large size of the prunes.

OREGON

UNDER sponsorship of the Medford Chamber of Commerce an excellent apple show, officially known as the Rogue River Valley Apple Exposition, was staged in that city the last of October, opening to the public October 29. The judging was done the day before. An attractive premium list, including both cash and merchandise awards, was arranged by the committee in charge.

ONE of the largest prune orchards of the state is that of Dr. E. D. Scarbrough, Cresswell, Lane county, containing 147 acres of trees. Twenty-five acres of trees are 31 years old and 122 acres are 20 years old. The yield this year was good, amounting to approximately 250 tons of dried prunes. Four dryers containing 148 tunnels were used in drying the crop and employment was given to 150 persons and six teams in handling it.

THE walnut crop handled by the Oregon Growers' Co-operative Association was practically all sold by the first of last month and at prices averaging one and two cents above those being paid for California walnuts. The grafted nuts sold for 30 cents, the No. 1's for 26½ cents and the No. 2's for 18 cents.

THE first Rogue River Valley apples sold in Chicago this season consisted of a straight car of choice Winter Bananas, packed and shipped by the Oregon Growers' Co-operative Association, and brought an average of \$3.40 a box at auction. The apples were the property of Lathrop Brothers.

THEFTS of fruit in the Hood River Valley this season have resulted in losses to several growers. Early in October an unknown truck driver loaded and hauled away a number of boxes of fancy apples from the ranches of W. T. Price and G. K. Johnson. Deputy sheriffs were given all available clues, but failed to locate the thief.

THE Radovan fruit dryer at Medford, the largest of its kind in southern Oregon, was destroyed by fire on the morning of October 9. The plant was owned by Mrs. F. M. Radovan, who said the loss amounted to \$33,500. Insurance held aggregated \$25,000.

CONKLIN & DEAN is the name of the new firm formed by the merger of the business of John F. Dean and the A. G. Conklin packing and shipping houses of Cove, Oregon. The new firm is said to be a rival of the Earl J. Stackland fruit house, and the merger is said to mean much to the fruit growers of Cove Valley.

ALL activities of the International Apple Shippers' Association for the Salem district will be in charge hereafter of R. C. Paulus, general

manager of the Oregon Growers' Co-operative Association, who has been appointed special vice-president of the international association. He will represent the organization in problems of transportation, storage and other operations relating to the welfare of the apple-shipping industry in the district.

ROSENBERG BROTHERS, proprietors of the Bear Creek orchards, near Medford, sold a carload of D'Anjou pears on the New York market for \$4249, said to be the highest price ever paid for pears in the United States. This represents a price of \$4.25 per half box. The deal was made through the Stewart Fruit Company.

TROUBLE was experienced in the Hood River apple district over getting professional apple packers to work. It was estimated that at one time at least 100 idle packers were in the district, but refused to work for less than 7 cents per box, while the growers have kept to their offer of 5 cents per box.

IDAHO

THE prune crop of southwestern Idaho was unusually heavy. Production in orchards between Boise and Weiser was reported as approximately 2,200 cars. The growers received \$50 and \$55 a ton for the green fruit.

REQUIREMENTS for transporting Idaho's apple crop, estimated at 3,933,000 bushels, have been around 4,100 cars. Yields in the Boise and Paytte Valleys have been better than anticipated in early estimates.

AT THE height of the apple canning season the Oregon Packing company at Lewiston employed more than 175 persons. Receipts of Johnathan apples totaled 300 tons. The cannery then worked on Rome Beauties and is finishing with Winesaps and like late varieties.

THE Mesa orchard at Council, one of the largest apple orchards of the state, has a yield of 200,000 boxes this year.

SERVICE
IS OUR FIRST N-AIM



THE
SIMPSON & DOELLER
CO.
1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES
AND PRICES

WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.

Good roads
and good
Gasoline

That is the combination that brings a smile to the motorist.

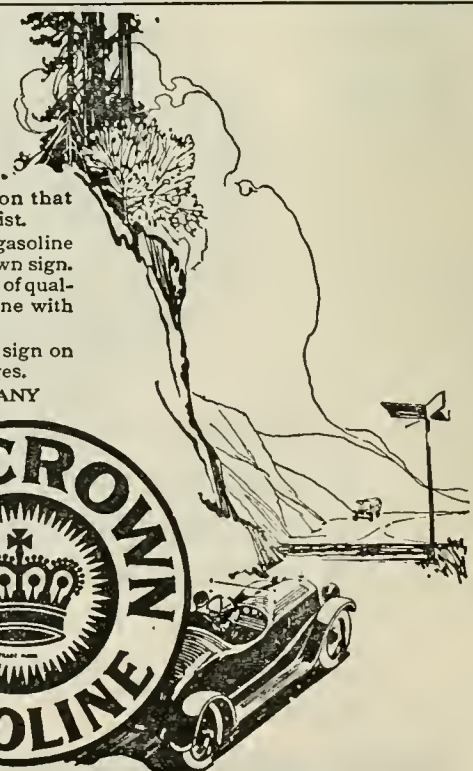
You can be sure of good gasoline where you see the Red Crown sign. Red Crown is "the gasoline of quality"—the all-refinery gasoline with power in every drop.

Look for the Red Crown sign on service stations and garages.

STANDARD OIL COMPANY
(California)



The Gasoline
of Quality



CALIFORNIA

LAST month a group of California pear growers and experts interested in pear culture came to study the methods of Professor F. C. Reimer and others in successfully combating pear blight in Oregon. It is highly probable that on their return they will be able to give California growers some vital pointers on the control of blight. The visiting party consisted of Horticultural Commissioner H. P. Stabler; James Mills, Hamilton City grower and shipper, and Howard Reed and H. H. Wolfskill, pear growers.

CHARGE was made last month by Miss Margery Lynch, field agent of the California Industrial Welfare Commission, that apple packing establishments of the Watsonville district were violating orders of the commission in paying women packers 25 cents an hour instead of 33 1-3 cents as provided by law. The commission announced that it would send agents to the district to see that the minimum wage be put into effect, but report as to what was accomplished in this line has not been given out.

C. M. BROWN of the Golden Orange Association began packing apples in the Yucaipa district near Redlands the first week in October. This was the first time apples have been packed in quantity in that district. Mr. Brown said he expected to handle 100,000 boxes of Delicious and 150,000 boxes of Johnathans, Rome Beauties and Winesaps.

LATE in September the first straight carload of strawberries in the history of the industry there were sent direct to the Atlantic Coast from the Pajaro Valley. It was said these berries were the only ones on the market at the time and would have no competition in eastern markets until Florida berries show up.

IN a suit involving refusal of the California Packing Corporation to accept about half of the 1920 prune crop of Milos M. Gopecevic of Lakeport the plaintiff won \$20,000 damages. The corporation accepted and paid for about half of Gopecevic's prunes, but when he delivered the remaining 54 tons declined to take them.

CONFIDENCE in grapes continues strong in Tulare county. For the present year it was reported that 4600 acres of new vines were set out. New plantings of all vines in the county reached a new record, the aggregate being 19,542 acres, requiring 10,130,639 plants.

THE fifty-fourth state fruit growers' and farmers' convention of California was held in Los Angeles October 24-28.

AT a meeting held in Dinuba by 200 growers, shippers and distributors of Emperor grapes a standard high-class pack was established for the crop to be handled in kegs and a minimum price of \$4.50 per keg, f. o. b. California, was agreed upon. Arrangements were made to have state inspectors see that an A-1 quality be maintained in the pack.

FANCY wine grapes have sold in the vicinity of San Francisco as high as \$135 per ton, with ordinary stock selling from \$90 to \$100 per

ton. Car shortage has checked the shipment of wine and table grapes. Dealers expect the entire raisin crop of this year and the surplus from last season to move at the raisin association's price.

THE Riverside cannery of the California Peach and Fig Growers turned out this season 2,500 tons of canned peaches. The market for these, as well as other lines of canned goods, was reported as excellent.

MORE than 100 grape pickers employed by the American Fruit Growers, Inc., went on strike for 40 cents an hour recently. They were being paid 35 cents an hour.

D. WALTER WILLIAMS, representative of the Pacific Cranberry Exchange, has opened an office in San Francisco to assist there in the marketing of this year's crop of berries.

Save and Prosper

With constant systematic saving your account should grow to be the foundation of a fortune.

You will have capital to invest advantageously when opportunity offers. You will be on the road to success.

A Savings Account may be opened with an initial deposit of one dollar.

The First National Bank

OF PORTLAND, OREGON
The first national bank west of the Rocky Mountains

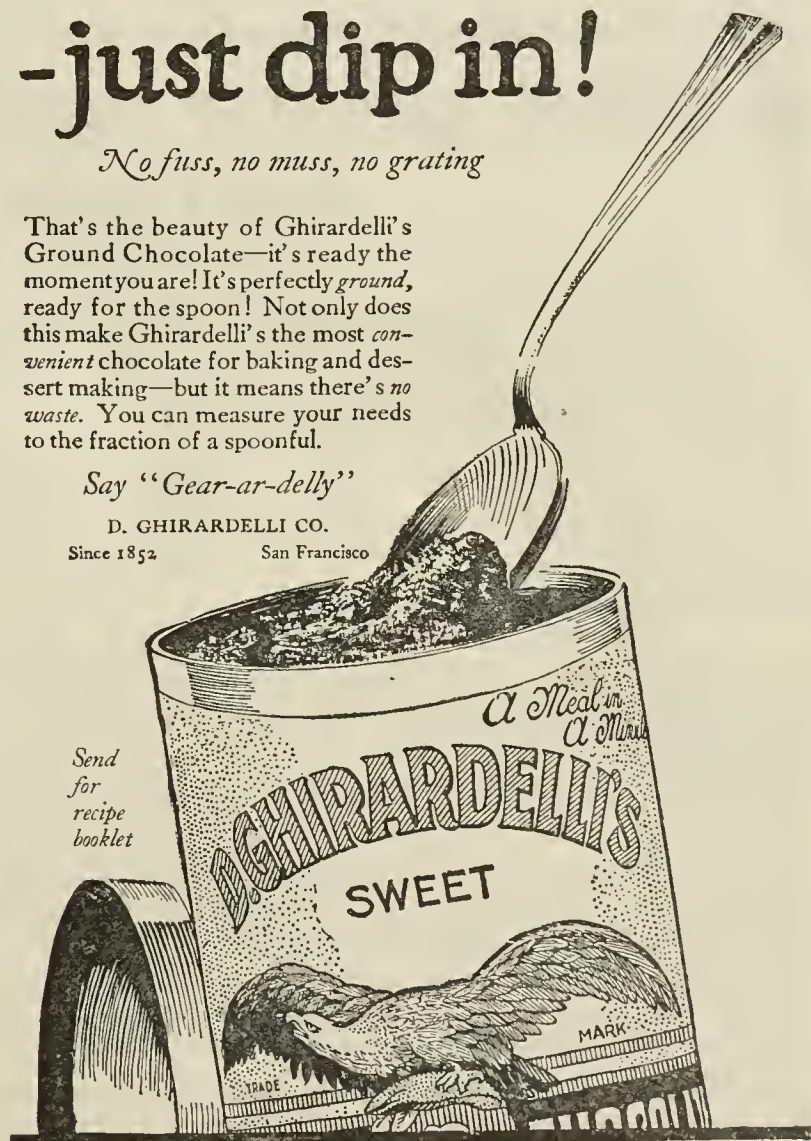
-just dip in!

No fuss, no muss, no grating

That's the beauty of Ghirardelli's Ground Chocolate—it's ready the moment you are! It's perfectly ground, ready for the spoon! Not only does this make Ghirardelli's the most convenient chocolate for baking and dessert making—but it means there's no waste. You can measure your needs to the fraction of a spoonful.

Say "Gear-ar-delly"

D. GHIRARDELLI CO.
Since 1852 San Francisco



GHIRARDELLI'S
Ground CHOCOLATE

With the Poultry

PROPER SIZE OF POULTRY HOUSE
THE proper size for a poultry building depends a great deal upon the number of fowls to be kept and the size of the flocks. From 25 to 100 seems to be about as many as is safe and economical to keep together. With flocks of this size about four square feet of floor space should be allotted to each bird, which will suffice in most cases where careful attention is given to cleanliness and ventilation. Three to three and a half square feet is enough for Leghorns in large flocks. If the fowls are kept in smaller flocks, a little more floor space per bird will be needed. Where the climate is so mild that it is unnecessary to keep the fowls confined, except for a few days at a time, and especially if the fowls are kept in small colony houses, less space per bird will be sufficient. The smaller breeds being more active and restless, require about as much room as the larger birds.

A POULTRY house should not be so wide that the sun cannot reach the back of the house, say poultry specialists of the United States department of agriculture, or it will be damp. Eighteen feet is a convenient width for a large house if there are no alleyways. The house should be built as low as possible without danger of the attendants bumping their heads against the ceiling. A low house is more easily warmed than a high one.

Be sure that your chicken house is tight on three sides and that there is no chance for a draft to strike the hens. If hen roosts are placed in a draft during the fall and winter, colds are sure to develop, which may develop in roup and other troubles.

PREPARE FOR WINTER EGGS

THE time is at hand to begin preparation for a maximum egg crop during the cold months when eggs are highest in price. Get the poultry house and yards neatly fitted up. If you haven't a variety of proper feeds on hand lay your plans so you will be sure to have all that is needed at the height of winter. Leaving such things to take care of themselves when the time arrives is an

expensive bit of procrastination. It may prove to be the difference between profit and loss.

POUSTRY MEN who wish to have their flock produce the maximum number of eggs economically during the late summer and fall months should supply the hens with a ration carrying a liberal amount of protein. Meat scraps, skim milk or buttermilk provide an excellent food for this purpose.

THE one sure way of having flocks free from lice is to prevent the lice from getting a start. It's a lot easier, too, than to give the vermin a chance and then have to fight them afterward.

IF YOU haven't improved your flock by the purchase of good fowls of heavy-laying and pure-bred strains give the idea serious consideration. Others have found that money thus spent brought fine returns.

IT IS quite foolish to expect 200-egg pullets from 100-egg hens. Like still begets like in the poultry yard as elsewhere.

BETTER FRUIT'S FIRST BARGAIN DAY OFFER

(Good Until December 25, 1921)

Two Years for the Price of One!

This is YOUR Opportunity:

IF you are NOW a subscriber, to get Two Full Years ahead from the date your present subscription expires for \$1.00.

IF you are NOT a subscriber at present to receive BETTER FRUIT *two full years for \$1.00.*

IF you are NOW a subscriber and want to give some friend a Christmas present of BETTER FRUIT, send \$1.00 and we will extend your subscription one year, also send your friend BETTER FRUIT for one year, thus giving two subscriptions for the regular price of one, or we will send BETTER FRUIT to your friend for two full years.

In other words, you may have as many Full Years' subscriptions as you want at 50 cents each, either all for yourself, or some for your friends.

Whereas this year you fruit men will make some money, we realize that you were all hard hit last year, and so to help just a little we are making you this reduced price. The price of \$1.00 applies to subscriptions within the United States; foreign subscriptions may be figured at one-half the foreign price, or \$2.00 for two years.

We need your support, and perhaps we can help you through the coming year. We are working for the very things which will help you most in the fruit game, but in order to put them through we must have subscribers. Use the coupons below NOW while you think of it, and save half the cost of your fruit paper.

This coupon for your own One or Two Years' Renewal.

Name.....

Place.....

State..... No. of Years.....

R. F. D..... Box..... **A**

This coupon for your friends' One or Two Years' Subscription

Name.....

Place.....

State..... No. of Years.....

R. F. D..... Box..... **B**

SYKES' SERVICE BULLETIN

Vol. I

Portland, Oregon, November, 1921

No. 3

Why Pack Sykes?

Does the hit-and-miss practice of close paper wraps, with corners of boxes stuffed with paper, or frequently a small apple wedged in to make a tight layer—produce the correct pack?

What is the answer—if you have SUPERIOR fruit—which should be sized correctly and packed correctly—if you expect it to keep in storage?

SUPERIOR fruit has a value. Is it not false economy to pack superior fruit as cheaply as possible—thereby taking all of the risks of common or cold storage?

Sykeing Superior Apples

Does it pay to pack GOOD fruit in the cheapest manner possible—with the cheapest wraps known—and under a hit-and-miss practice?

Have you a right to expect good RESULTS from such a pack? Is it not logical that you would get BETTER results from CORRECT sizing and CORRECT pack?

Until you use Sykes Safety Separator Wraps, you will never know how well your fruit will keep.

What Is Sykes Pack?

The Sykes Safety Separator Apple Wrap is a moderately thick flexible sheet of wood pulp, cut to fit the standard apple box.

Each layer or tier of fruit is separated from the one above and below by one of these Separator wraps. Each size of fruit has a special wrap insuring the proper position of the fruit in packing as well as preventing the individual apples from touching each other.

A series of cups are stamped in a mathematically correct position, according to the size of the fruit. A series of cuts in each cup provides tongues of paper between the individual fruits of each tier—the body of the wrap itself separating the layers or tiers—hence the name "Separator."

This is the SYKES SYSTEM—an interlocking of correctly sized fruit, correctly packed, forming one solid structure of fruit, the individual apples being separated from each other by these cuts or tongues of the cups. If there be any shrinkage during storage, each apple retains its position, the interlocking principle preventing any bruising, hence helping to prevent any decay.

How to Pack Sykes

The fundamental principle of the "Sykes System" is summed up in the term "bridging the arch"—in other words, an INTERLOCKED structure. A special wrap is provided for each standard size of fruit. If the wrong wrap is used, the experienced Sykes packer detects the mistake quickly. If the fruit has been sized wrong, he quickly catches that error.

The first layer or tier MUST be placed CORRECTLY in position. It is the FOUNDATION of the "Sykes System."

The box is set flat on a flat table. A Separator wrap is placed in the bottom of the box. The first tier of apples is placed, blossom end down, in the cups of the wrap (the number and arrangement of cups varying with the size of the fruit). It takes but a few moments to place the first tier CORRECTLY. If the fruit has been properly sized, the individual apples will not touch each other, the spaces between the apples forming uniform triangles.

When the first tier has been placed, a Separator wrap is placed over the tier. The cups nest into the triangular spaces formed by the apples of the first tier. The fruit of the second layer is then placed in the cups, completing the second tier. Again, the apples of the second tier do not touch each other—the spaces between the apples again forming small triangles.

The third Separator wrap is placed in position. The cups again nest into the triangular spaces. This process continues until next to the top tier is in position.

A soft wood board, which will fit easily into the box, is used to press down the fruit uniformly—light pressure in the center, heavier on ends—LOCKING each tier into the triangular spaces in the tier below—in the layman's words, "bridging the arch."

The top tier is then placed in position, giving the required bulge at the center. The experienced packer soon learns how to make a finished job in placing the top tier or facing the box. To protect the top tier another Separator wrap is placed in position and the lid nailed fast.

Every tier or layer is thus uniformly wedged into the spaces below, with the exception of the first or bottom tier, which forms the foundation for the series of arches.

Oiled Wraps Popular

Following the several experiments made by Federal experts during the past two seasons, using various oil formulas, the use of oiled wraps appear to be the NEXT step in the evolution of Scientific Apple Packing.

Oiled wraps, it has been proven, reduce the amount of scald in storage—practically all of the experiments have proven most of the claims for oiled wraps.

At a trifle additional cost, Sykes Safety Separator Wraps, treated with an approved oil preparation, may now be had in limited quantities. Next season there will be an ample supply for all packers.

The oiled wraps, without doubt, has come to stay—progressive manufacturers are preparing to meet the demand.

Sykes Pack in Storage

YAKIMA ARTIFICIAL ICE & COLD STORAGE COMPANY

YAKIMA, WASHINGTON

April 24, 1920.

American Paper Co.,
Seattle, Wash.

Gentlemen: In reply to your inquiry regarding what we know of the Sykes Pack, and what we consider it, will say our experience with the pack has been with the shipping end only.

We placed some five different varieties of apples packed with the Sykes pack in storage, so that we could observe how they kept in pack.

The varieties stored were Romes, Winesaps, Ark Blacks, Spitzenbergs and Delicious. While we still have these in storage, we opened them to make observations on about the sixth of April.

When opened, we were very agreeably surprised with the results. They showed practically no scald and very little decay.

These varieties, which were out of season, showed up very fine indeed, being hard and fine, much more so than one would expect at this time of year. Where there was any decay, will say that the apples were dry, and the paper of the pack was also dry, no decay having started next to those decayed.

In fact, we are ready to recommend this form of pack for its long keeping qualities.

Yours truly,

YAKIMA ARTIFICIAL ICE &
COLD STORAGE COMPANY

Sykes System

The Sykes Principle is that all round fruits should be packed in a manner forming mathematically correct triangles and arches. This calls for the CORRECT SIZING of fruit so that a certain number pack may be secured without having any waste space on the one hand, or without crowding the fruit, on the other.

"Sizing" under the Sykes System is not done under the iron-clad rule which has been in common use for years in packing round fruit. Under Sykes System sizes are governed solely by the dimensions and the shape of the carrier. NO OTHER system in packing follows this rule—this is one of the chief reasons why scientific packers MUST eventually accept and ADOPT the Sykes System.

If your supply house cannot furnish you with Sykes Safety Separator Wraps NOW—please notify BETTER FRUIT at once—and your order will be promptly filled.

EXCLUSIVE DISTRIBUTORS SYKES WRAPS

BLAKE-McFALL CO., Portland, Oregon
AMERICAN PAPER CO., Seattle, Wash.

SPOKANE PAPER & STATIONERY CO., Spokane, Wash.
PACIFIC FOLDING BOX FACTORY, San Francisco

Some Reliable Northwest Nurserymen

Blight-Proof SURPRISE PEAR ON JAPAN PEAR ROOT

Tests made in every conceivable way in the experimental blocks along side of and at the same time with all leading varieties of pears have proven the impossibility of spreading pear blight more than a trifling distance beyond the point of inoculation.

Plant the blight-proof Surprise and insure against loss. The second year top-work to Bartlett, Bose, or any desired variety and you have the most blight resistant trunk and framework yet developed. This method is endorsed by leading horticultural experts after extensive experiments. Thousands of these trees have been planted the last few years in California, Southern Oregon, and in Washington. Our buds were secured direct from Prof. Reimer of the Southern Oregon Experiment Station, Talent, Oregon.

In our four hundred-acre nursery located on clean new soil of the Yakima Indian Reservation we grow a complete assortment of commercial fruit trees and general nursery stock. Rich soil, a long growing season, moisture under control and perfect fall weather for maturing our stock enable us to produce and deliver nursery stock unsurpassed for vigor, thriftiness and root system.



WASHINGTON NURSERY CO.

TOPPENISH, WASHINGTON

Salesmen Everywhere—More Wanted

Capital City Nursery Company

426 Oregon Building
SALEM OREGON

*Will supply you with
first class stock in*

**FRUIT, NUT AND OR-
NAMENTAL TREES,
SMALL FRUITS,
ROSES**

Send for catalog

WE Need Salesmen

CORY'S THORNLESS



MAMMOTH BLACKBERRY

The greatest horticultural novelty of the century. Very large, early, sweet, corless and almost seedless, with rampant growing vine which is absolutely thornless. Millions will be sold as fast as they can be propagated. Get your order in early for next season. Last spring I was deluged with orders which could not be filled and I can promise but a few thousand for the coming season. Price, 50 cents each, 3 for \$1.00; \$3.00 per dozen. Will be well packed and sent prepaid by parcel post to any address. Descriptive catalog free.

ISAAC F. TILLINGHAST

Seed and Plant Specialist
212 Podel Street Santa Rosa, California

An Early Order For Fall or Spring Delivery

Placed with

SALEM NURSERY COMPANY

428 Oregon Building
SALEM, OREGON

Will receive careful atten-
tion and give you good
choice of varieties

Additional Salesmen Wanted

Lucky Cross and Unique

Two never failing, double-crop varieties of strawberries which we have perfected.

WHY grow only ONE crop, when you can grow TWO on the same plants?

The increasing number of growers sending to us, proves that our plants are superior. Write us for more detailed information regarding these money makers.

Evergreen Plantation

New Meadows, Idaho

Reliable Trees and Plants

We have a complete line of guaranteed nursery stock: apple, pear, cherry, peach, apricot, prune and nut trees, gooseberries, currants, etc., which we offer planters at very close prices. However, orders should be placed at once to get the best grades. Send us your want-list today.

Benedict Nursery Co.

185 East 87th St. N. Portland, Oregon



FRUIT TREES NUT TREES PLANTS, ETC.

We offer a good line of Italian, French Improved, Double X and other prune trees, propagated from selected scions. Walnut grafted, Filberts, Apple, Pear, etc. Berries, Gooseberries, Currants, Plants, etc. We have something of interest for you; try our inexpensive selling system; send for Planters' List; 31 years in business.

Carlton Nursery Co.

Groner & McClure

Pioneer growers of grafted

Vrooman Franquette Walnut Trees

Heavy and Early Producing Stock
at Reduced Prices

A good market is always assured for Oregon Grown Walnuts. Write for leaflet, "Walnut Growing," and prices.

Groner & McClure

Address Route 2, Hillsboro, Ore.

BETTER FRUIT

November, 1921

Bees and Beekeeping

Edited by AMOS BURHANS

WHEN I first began keeping bees I went out into the yard one evening and opened a hive by prying the lid off. The reception I had was a warm one. I'll never forget it. Though I had on gloves and veil, the bees made an attack on all fronts, actually hanging between me and the hive a curtain of stings, a great many of which reached through.

So I learned from actual experience that I had gone at it too rough-shod and entirely unscientific. First, I had opened the hive at the wrong time of day. Between the hours of 10 and 4 on a real bright, sunny day is best. Second, I found on looking the matter up by consulting the books of the beemasters and several beekeepers that I should have used some smoke.

Then after I found out about the smoke I learned there were few ways only in which it can be successfully used. You can use too much of it and you can use it the wrong way. After a few years of experience I have adopted an almost standard way of doing the trick. I call it a trick, because so many tell me that it must be a trick when I easily open their hives which, they say, contain hostile bees.

A GREAT beekeeper by the name of Doolittle taught me the idea of thumping a little on the top of the hive before smoking. He said this helped to get the bees roaring, and when you could hear them roaring it was a sure sign they were filling themselves with honey. Immediately after you thump on the top of the hive, put the muzzle of the smoker down at the entrance and gently but firmly drive the entrance guard bees inside. Do not give them too much smoke. Three or four puffs of a smoker that is going good will be plenty. Lots of times I do not give them more than two. Rotted wood or excelsior make a white smoke. It is best. Don't use greasy rags.

In a few seconds they will be busy inside getting ready to be disturbed. That is, they will fill up on honey. This makes them much more peaceable than to try handling them without warning.

Then raise the cover carefully and slowly put the hive tool, if necessary, under the edges, prying up. A little practice will show you how to do this with the right hand and at the same time hold the smoker with the left. As the cover comes up, gently blow a little smoke across the tops of the frames, but do it quickly. Do not give the bees time to get into the air and at you. As they run down between the frames to get away from the smoke you can soon tell when to stop smoking. I make it a rule not to blow the smoke down between the frames unless it is to clear the bees out of a super. I almost never send the smoke in between the frames of the brood chamber.

BEES are quick to learn, I think. Some of the hives that I handle oftenest are easier to open and work with than those that get less handling. Also there is a difference in the way bees act. Some colonies are gentler than others, because they may be bred from a queen that breeds in them a gentler instinct. Also, there is a difference in the way bees act on account of weather. On a cold, wet day when the hive is full of field bees you will find it harder to handle them than when it is bright and warm and the field bees are at work. Also, remember that as a rule a pure-bred three-band Italian queen of a good strain of working, gentle bees will produce gentler bees than a black common queen, whether she be wild or in a bee yard.

But go at the opening of the hive gently. Don't be in a hurry. Remove the frame nearest the side you are working on to make room to handle the others. If there is a scarcity of nectar in the fields there will be robbers about

to get into the open hive, so have a burlap cloth handy to cover over the open hive as you remove the frames for examination. Be quiet, but do the job as quick as possible. In spring and fall work fast to keep from chilling the brood. As the bees come up from between the frames just give them a bit of smoke and down they will go about their business.

IT IS a simple trick to grow excellent rhubarb for the table in winter time, provided the preliminary steps are taken in the fall, says Prof. J. R. Hepler of New Hampshire college. Old clumps of rhubarb should be dug up late in the year with as much dirt as possible, and then left outdoors until they freeze solid. They should then be taken at intervals and set out in the cellar, being covered with two inches of soil and watered. The temperature should run from 50 to 65 degrees, and this may be maintained, if it is a cool cellar, by a lamp in a small section blanketed off. After forcing the roots are worthless, but young roots, one year from seed, are excellent for the purpose. The rhubarb will be found a little milder and more tender than that grown outdoors.

AMERICAN GROWN
FRUIT TREE STOCKS

Apple Seedlings, Straight or Branched. Also Pear Stocks from French and Japan Seed, American Plum, Mahaleb Cherry and Peach Seedlings in all Grades. Car Lots to Central Points.

Foreign Grown Stocks

Apple, Pear, Mahaleb, Myrobolan, Quince, Manetti and Multiflora. All Grades. In Prime Condition. Can quote in France or out of Customs in New York or at Shenandoah, Iowa. Prices reasonable.

Remember our Complete Line of General Nursery Stock for Fall and Spring trade. We are now ready to do Business. Submit List of Wants for Prices to

SHENANDOAH NURSERIES

D. S. LAKE, President
SHENANDOAH, IOWA

Satisfactory Sales Service

Our facilities and connections for the proper distribution of carlots or less of

APPLES

assures prompt and satisfactory returns to the grower. Let us figure with you before disposing of your crops.

AMPLE COLD STORAGE FACILITIES IN OUR OWN BUILDING

W. B. Glafke Co.

COMMISSION MERCHANTS

East Third and Alder Streets

PORTLAND, OREGON



A grade
for each type
of engine

STANDARD OIL COMPANY
(CALIFORNIA)

Keeps
your
tractor
on the job.

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

NURSERY STOCK—Italian Prune Trees and trees of all kinds. Berries and small fruits of all varieties. Buy direct and save 50 per cent. Brooks Nursery, Lafayette, Oregon.

APPLE TREES and a full line of nursery stock at reasonable prices; save agents' commission by ordering direct from nursery. Write for price list. Lawson Nursery, Gates, Oregon.

FARMS FOR SALE

FOR SALE—17 55/100 acres all cleared in Willamette Valley 30 miles from Portland. Splendid fruit or nut land, \$200 per acre. Terms if desired. B. L. Herbert, 51 E 8th St., North, Portland, Oregon.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Washington.

TEN-ACRE ORCHARD HOME, \$4,000.00; 450 perfect 10-year-old apple trees, woven wire; new 5-room bungalow. Spring water piped to place. Ed Hathaway, Goldendale, Wash.

CALIFORNIA FARMS for sale. Write for list. E. R. Waite, Shawnee, Oklahoma.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

MISCELLANEOUS

BUY FROM GROWER—Save money. Puget Sound Narcissus Bulbs, better than imported stock, 60 cents dozen. German Iris, \$1 dozen. Peonies, 50 cents each. Delphiniums, Pyrethrums, Columbines, 80 cents dozen. Ornamental trees, shrubs, roses, berry bushes, Lowest prices. Catalogue. Joe Smith, Longbranch, Wash.

WANTED—By expert orchardist, management of orchard of some importance. Have thorough knowledge of all branches of the business, machinery, etc. Bond furnished, if desired. Box 284, Hood River, Oregon.

FOR SALE—Fresh extracted honey: five-gallon can, \$7.50; two cans, \$14.50; six ten-pound pails, \$8.50; twelve five-pound pails, \$9.00. A. L. Traner, Touchet, Wash.

WANTED—Position as housekeeper. Mrs. Fisher, Metairie Falls, Wash.

CLEAN VEATCH and grey seed oats for sale. W. W. Harris, Oregon City, Oregon.

PURE EXTRACTED HONEY—\$7.50 per five-gallon can; two cans, \$14.00. Everett Sauter, Touchet, Wash.

HOMESPUN TOBACCO—Chewing, 10 pounds, \$2.50; 20 pounds, \$4; smoking, 10 pounds, \$2; 20 pounds, \$3.50. Farmers' Union, Mayfield, Ky.

HONEY—A-1 extracted honey, 10-pound pail, \$1.70, postage paid to fourth zone, cash with order. W. C. Forcher, Grand View, Idaho.

HOMESPUN TOBACCO—10 lbs., \$2.50; 20 lbs., \$4, c. o. d. Ford Tobacco Co., Mayfield, Ky.

HOMESPUN TOBACCO—Chewing, ten pounds, \$3; 20 pounds, \$5. Smoking, 10 pounds, \$2.50; 20 pounds, \$4. Farmers Union, Mayfield, Ky.

POULTRY

PETALUMA HATCHERY—Established 1902 by L. W. Clark. Chicks every Monday and Thursday, White and Brown Leghorns. Heavy laying strain. Safe delivery guaranteed. Send for prices and terms. L. W. CLARK, 615 Main St., Petaluma, Calif.

BLUE ANDALUSIANS—Stock and eggs for sale. D. M. Calbreath, Monmouth, Oregon.

PURE BRED Sicilian Buttercup cockerels, \$5 each. Charles Carland, Route 2, St. Maries, Idaho.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO., 427 Oregon Building Salem, Oregon

Dehydrating Cranberries

This season a new dehydrated product will go onto the market rather extensively from Oregon and Washington via the plants of the King's Food Products. Experiments in dehydrating cranberries, conducted by President Earl G. Clark, of the company, for some time, have eventuated in a successful method, he has announced. As a result agreements have been reached with the growers, particularly in Oregon, whereby dehydrated cranberries are to be put out in large quantity.

It is declared that experiments with this berry at the Salem plant have disclosed that it is as well adapted for the dehydration process as most any fruit or vegetable now on the list. It responds readily to the restoration process. Both the growers and company heads feel confident that before many months pass the shelves of thousands of grocers over the land will carry dehydrated cranberries that grew in the bogs of Oregon and Washington.

Preventing Bruises

The problem of preventing the bruising of apples during picking has been satisfactorily solved by F. E. Thompson, a Yakima Valley grower. In Mr. Thompson's orchard the pickers used buckets. They are not permitted to dump the apples from bucket to box, this detail being delegated to one trained man, who dumps the apples for all the pickers. Plenty of buckets are supplied so the picker merely sets down the bucket he has filled and walks away with an empty one. By this system bruising is kept down to one per cent and Mr. Thompson says those in whose orchards it runs to two per cent and more are sustaining too great a loss.

GROWTH of the Eugene Fruit Growers' Association was detailed recently before the Chamber of Commerce by Manager J. O. Holt. He said the association has a paid-up capital of \$175,000 and 1000 members in Lane county. When the association took over its present plant 14 years ago the output was 9000 cases of canned goods. This season the output was 130,000 cases. Last season the association's dryer turned out 1,500,000 pounds of dried fruits. Last season the plant produced 50,000 gallons of cider and 20,000 gallons of berry juice was made this season.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

COLUMBIA NURSERY COMPANY

1490 Union Ave., No. Portland, Ore.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street SALEM, OREGON

Hotel Hoyt

200 Rooms—100 Baths ABSOLUTELY FIREPROOF

Corner Sixth and Hoyt Streets Phone Broadway 1960 PORTLAND, OREGON

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. Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The ARCADY Company Advertising

That it pays to advertise is no longer a question. It has long since been settled that it does pay to advertise.

However, it pays only when the right goods are advertised in the right way. Most advertising debacles could have been prevented had proper advertising counsel been consulted.

Many potential advertising successes are lying dormant because the right manufacturer or merchant has not as yet met and talked with the right advertising man.

Arcady Building • 12 1/2 Jefferson St., Portland, Oregon
Also PRINTING MULTIGRAPHING ADDRESSING MAILING MAILING LISTS
MAIN 8829
THIS PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT

NOW is the time to send to

Milton Nursery Co.

MILTON, OREGON

For their 1921-22 Catalog Full Line of Nursery Stock "Genuineness and Quality"



Where Weather strikes hardest— *The Roof!*

OTHER QUALITY PRODUCTS

especially prepared
for use on the farm.



Oronite Roof Paint

A high-quality protective
coating for prepared roofing
and metal roofs.

Mica Axle Grease

Gives a durable, smooth
lubricating film under
every pulling condition.
Keeps the axle cool; no
hot-boxes, no gumming.
The MICA makes it better.

Eureka Harness Oil

Preserves the original
strength and life of leather
and keeps it soft and pliable.
Keeps harness "new
looking."

Standard Hand Separator Oil

Correct Lubrication for
your Hand Separator, under
the conditions of high
speed and close fitting
parts.



The roof takes the brunt of all weather—
rain, wind and hot sun. Keep your shingle
roof in good condition—a neglected roof
means the cost of a new roof soon.

ORONITE SHINGLE OIL *Preserves Shingles*

Deterioration of shingles is caused by the
penetration of moisture and air into the fibre
of the shingles, hastening disintegration and
decay. The natural oils in the wood evaporate
and cracking and warping result. Your
shingles need constant protection against the
elements—rain, wind and sun.

Use Oronite Shingle Oil on all shingles
either on roofs or on side walls. It is a high-
quality preservative for shingles. It penetrates
the shingle fibre and fills the pores with a
moisture-resisting preservative. It retards
evaporation of natural oils in the wood and
counteracts the effect of age and exposure.

Oronite Shingle Oil is easy to use. It can be
mixed with colors. Ask our nearest agent
for formulas. Oronite Shingle Oil will make
your shingle roof last longer and give better
service to you.

STANDARD OIL COMPANY
(California)

ORONITE *means* QUALITY



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

AF Columbia Univ Libr
30Dec22

VOLUME XVI

DECEMBER, 1921

NUMBER 6



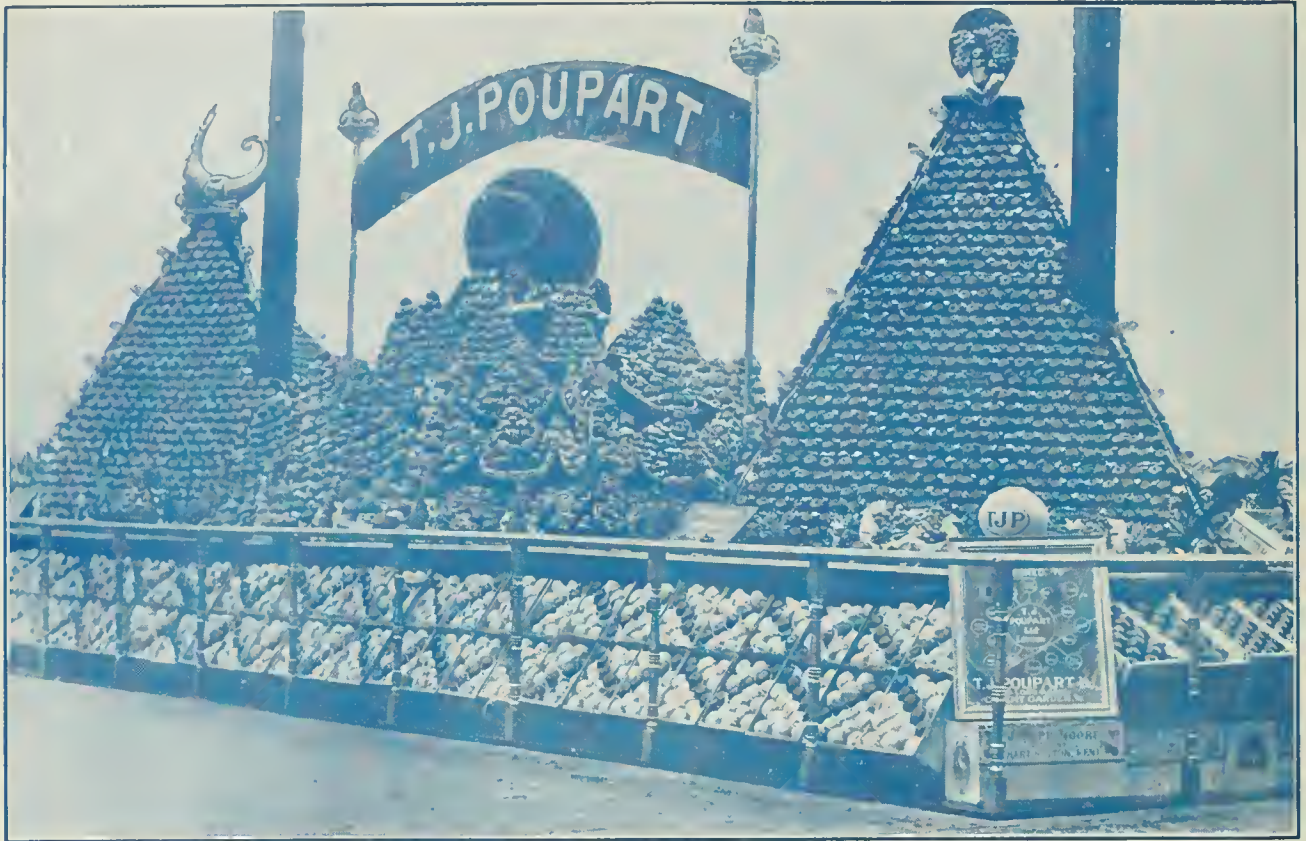
Greetings of the Season

Features in This Issue:—

- Winter Injury to Fruit and Nut Trees
- Timely Suggestions for Pruning Apple Trees
- Slipshod Practices in Marketing Fruit
- Bud Selection and Frequency of Mutations
- Elemental Treatise on Pruning the Apple
- Northwest Fruit Exposition

*20 Cents
The Single Copy*

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON
Subscription One Dollar per Year in the United States; Canada and Foreign, Including Postage, Two Dollars, Payable in American Exchange



Our Exhibit at Crystal Palace, London

There are 11 tons of fruit in the display representing 83 varieties. Each pyramid has a base of 30 square feet and is 8 feet high.

This exhibit was acknowledged as by far the most attractive both from an artistic and commercial standpoint. It was calculated to please the eye and stimulate the desire for possession—which is surely the manner in which fruit for sale ought to be displayed.

The POUPART SERVICE assures your receiving just what the market will produce.

Our business is founded on 25 years of absolutely fair dealing. That is why we are shipping twice as many carloads from the northwest this year as we did last.

Get in touch with Mr. Sam Birch, our representative, at 807 Wilcox Building, Portland, Oregon, for detailed information. Phone Broadway 5462.

Members of



T. J. POUPART

(John Poupart, William Ravenhill)

Covent Garden, London, W. C. 2

The Largest Firm of Fruit Salesmen in Great Britain

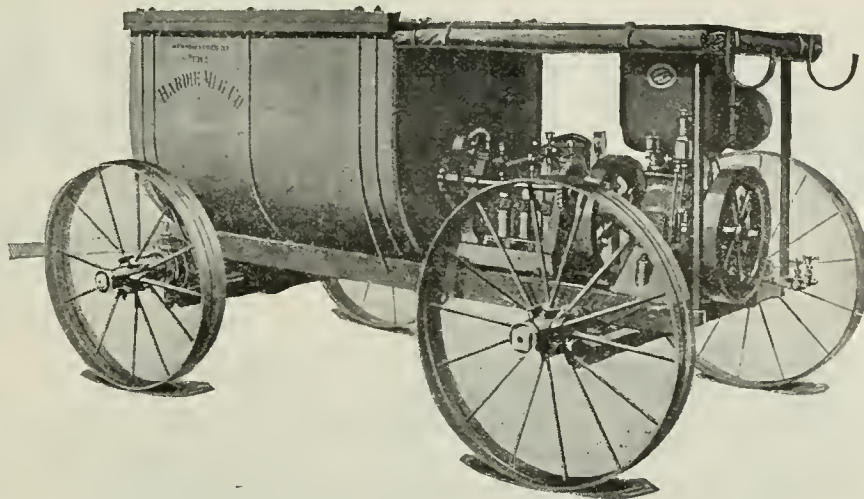
(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)

COMMISSION THE EXCLUSIVE BASIS (Purchase propositions cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES
Special Facilities for Handling Consignments from Co-operative and Other Organizations

**AN
ACHIEVE-
MENT**



**The 1922
HARDIE
TRIPLEX**

As pioneers in building power sprayers, we have shared the struggles of the fruit grower for the past twenty years. During this period the art of spraying has improved. Yesterday's spraying method will not answer for the demands of today. For the future, to insure your profit, spraying costs must be cut, but cut without sacrifice of that thoroughness which gives a clean crop.

NOW IS THE TIME YOU NEED A HARDIE

You need its reliability, its power to give you constant, continuous running. You need its freedom from costly delays at spraying time. You need its effective, rapid, high pressure spraying.

Today's fruit-raising problems cannot be solved by ancient sprayer equipment. We have perfected in the 1922 Hardie, the mechanical features that do give reliable action day after day. Note the following important mechanical features: flexible chain drive, built-in pressure regulator, practically frictionless plungers, threadless valve cages, and suction settling well.

Measured by any standard of sprayer values, the 1922 Hardie is a wonderful mechanical achievement.

THE HARDIE MFG. CO.

55 NORTH FRONT STREET

PORTLAND, OREGON

North Pacific Coast Line

Joint Service of

The Royal Mail Steam Packet Company—Holland-America Line

Fast Freight Service Between

**VANCOUVER, B. C.—PUGET SOUND—COLUMBIA RIVER—SAN FRANCISCO—and
LOS ANGELES HARBOR**

AND

**LONDON—LIVERPOOL—GLASGOW—HULL—ROTTERDAM—AMSTERDAM
ANTWERP—HAMBURG and HAVRE**

From Pacific Coast Ports	Loading	From Europe	Loading
S. S. MOERDIJK	Late December	S. S. NOORDERDIJK	Late December
S. S. NICHTROY	Middle January	S. S. KINDERDIJK	Early February
S. S. NOORDERDIJK	Late January		

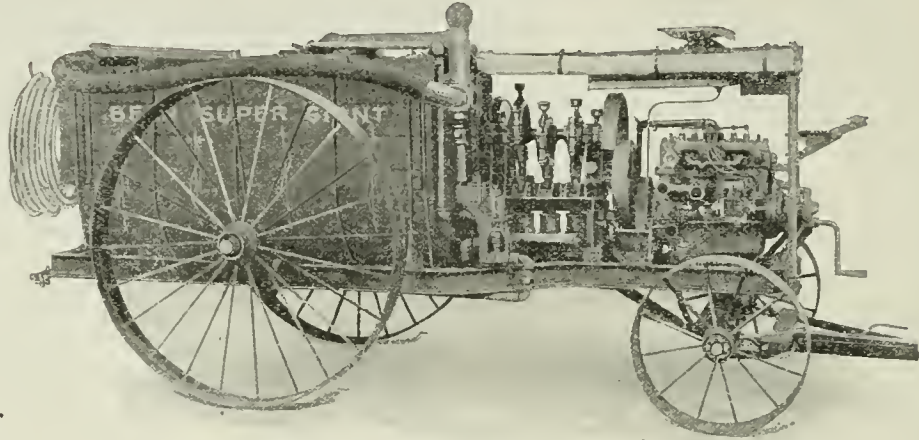
**All Steamers Equipped with Large Coolrooms and Refrigerators for the
Transportation of Fish, Fruit, Cheese and Other Perishable Cargo**

For freight rates and space apply:

**The Royal Mail Steam Packet Co., Wilcox Bldg., Portland, Oregon—
Phone Main 4565**

"Bean" SUPER GIANT

The Sprayer for Heavy Duty



*The Most Economical and Satisfactory
Outfit for the Large Orchard*

THE BEAN SUPER-GIANT takes the place of several smaller rigs and not only cuts the cost of spraying, but speeds it up and insures a better job. It has a nozzle capacity of from 20 to 25 gallons a minute at 300 pounds pressure. Equipped with 300-gallon tank. In the apple sections and where constant high pressure is important, this outfit is absolutely the best equipment it is possible to procure. The outfit is underslung and the wheels are extra large, so that even when the tank is full, the outfit may be hauled by any ordinary good team. Sign and send the coupon for new catalog which describes the entire Bean line in detail, from the Super-Giant down to the popular little Bean Simplicity, with a capacity of 4¾ gallons a minute.

Bean Spray Pump Co.

Originators of the first high pressure sprayer

19 Hosmer Street
LANSING, MICHIGAN
118 W. Julian Street
SAN JOSE, CALIFORNIA



19 Hosmer St., Lansing, Mich., Cal.
118 W. Julian St., San Jose, Cal.
Please send your "Sprayer Catalog."
Name
Street
Town
State
Kind of Fruit Grown.....
No. of Acres.....
50-514

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, DECEMBER, 1921

NUMBER 6

Winter Injury to Fruit and Nut Trees

By D. F. FISHER

Pathologist Fruit Disease Investigations, U. S. Department of Agriculture

As in every known fruit growing section outside the equatorial belt, one of the key problems of the Pacific Coast region is that of learning how best to minimize loss from cold weather. The grower who knows most about minimizing or escaping effects of severe weather in his orchard has a big lead over the grower who trusts his fate to guess-work. In this article, from a paper prepared by Professor Fisher, is presented a careful discussion of what happens to your fruit and nut trees in a freeze and why it happens. The facts and deductions have practical application because obtained from study of effects of the cold snap of two winters ago in Oregon and Washington. The article will have most timely interest for those who were in the path of last month's early snow and storm.

LESSONS of importance were gleaned from study of effects of the extremely cold weather in many parts of the Pacific Northwest two winters ago, which may well be impressed on the mind of every fruit grower. When reports of the very general freeze reached the Department of Agriculture, together with requests for advice as to methods of procedure in handling the injured trees, the writer was assigned to make a survey of the situation and render possible assistance.

The office of fruit disease investigations in the Bureau of Plant Industry at Washington has a most complete file of information on frost damage, collected by Dr. M. B. Waite and his staff over a period of more than 30 years, during which the subject was studied in all parts of the country. The writer, in approaching this Northwestern situation was fortunate in having so much accessible data from other sections to draw on in an analysis of local conditions and upon which to base his recommendations.

It would probably be well at this point to sketch briefly the different types of injury produced by cold and the factors that influence such injury in general.

There are several types of frost injury which we may list as follows:

1. Killing of the fruit-buds, either by extreme winter cold or by frost during the blossoming period.

2. Killing of the twig tips usually as a result of winter cold.

3. Browning or blackening of the wood in the branches or body of the tree, produced by winter cold.

4. Bursting of the bark from the trunk of the tree, with or without discoloration of the wood.

5. Lifting of the bark on the south and southwest side of the trunk or branches, this being the condition we know as winter sun-scald. This and the preceding condition is frequently caused by the reflection of the sun's rays off the snow, the consequent warming of restricted areas of the bark and thereby inducing growth activities within the cells, which render such parts most susceptible to the cold of ensuing nights.

6. Girdling, or partial girdling of the trees at the ground line, or just below the ground line, resulting in one of the conditions known as "collar rot." This is brought about when the snowfall is insufficient to insulate the tender areas at the crown or collar of the tree.

7. Winter-killing of the roots of the tree, with or without injury from the ground line upward. This likewise results from extreme cold and insufficient insulation of the roots by snow or otherwise.

IT IS NEVER easy to determine the degree of severity of any type of frost injury, as no doubt some of you can testify from your experience. The severity of injury usually varies from tree to tree and in different parts of the orchard.

The various types of winter injury are the result not alone of the degree of cold, but of a combination of the weather conditions and the condition of the trees, and in most cases the latter factor is the more important. The conditions of the tree which influence its susceptibility to frost damage may be outlined, in the order of their importance, as follows:

1. The degree of dormancy of the principal parts involved. (A completely dormant tree is far more resistant to cold

than one in partially succulent condition.)

2. The species or kind of tree. (For instance, an orange tree is more tender than a walnut, and a peach tree more easily injured than an apple.)

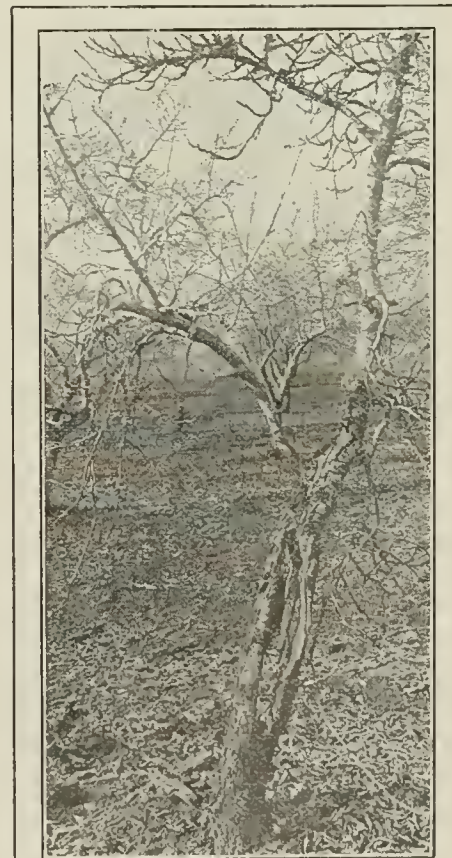
3. The variety. (The so-called Russian varieties of apples like the Red Astrachan and Yellow Transparent are very resistant to cold and survive where others fail.)

4. The age of the tree. (Under some conditions young trees are more resistant than older ones.)

5. Cultural conditions which affect the vigor of the trees, under which we may include the following:

a. Character of the soil and subsoil, especially its moisture holding capacity, which ties this up with (b):

b. Moisture and drainage conditions:



Twenty-five-year-old Italian prune tree ruined by frost damage of 1889 and resultant heart rot, but still living.

c. Fertility and manuring practises:

d. Cultivation and cover crops.

In a perfectly dormant tree, the order in which different tree structures are killed, depending upon the degree of cold and other factors is as follows:

1. A ring of wood next to the pith.
2. The pith. (These two are mostly found on twigs and small branches).
3. The youngest layer of wood next to the cambium.
4. The woody cylinder. (Injury to the wood can be definitely detected by the discoloration produced even by slight injury that does not affect the vitality of the tree. The degree of this discoloration can, in most cases, be taken as an index of the severity of the injury).
5. The fleshy bark. (This is often merely flecked or streaked, but in severe cases the entire bark finally dies and turns brown).
6. The cambium.

The degree of killing of fruit and leaf buds depends upon the hardiness of the buds and the species and variety of tree. Fruit buds of most species, when fully dormant, are about as hardy as the woody cylinder and generally die only when the trees are quite badly blackened in the wood. But in the case of the plum, for instance, the fruit-buds may be killed by winter cold while the wood shows no injury. With the apple, on the other hand, the wood is severely injured before the buds are affected or the twigs are killed back.

THE cambium is one of the last structures to die in severe freezing weather, provided it is thoroughly dormant. But just under the cambium is the newest formed part of the wood, a ring of varying width. This is much more easily killed, and, showing as a black line in cross section, it is frequently mistaken for the cambium. However, when the least bit of growth has taken place on the cambium, or if it is not thoroughly dormant, it is likely to be the first thing killed. Likewise, in the case of fruit-buds, if they are the least bit swelled they are most susceptible to cold and very easily killed. Fruit-buds are most sensitive when swelled, but the cambium may be killed or lifted from the wood either from the fact that it has not ripened (in event of fall freezing), or that it has swollen from mild winter weather, or spring growth. If the bark is lifted from the wood this does not necessarily mean that the cambium has been killed in all cases, though this may be true. There is always a chance for the cambium to be alive if the bark is alive. After a few mild days this can readily be determined by examination. But in your examination make perpendicular cuts through the bark, not at right angles to the direction of growth. A narrow strip of bark with underlying wood attached, cut in the direction of growth of the part examined affords ample opportunity for diagnosis and

leaves a wound that does not impair the recovery of the tree if it has the least chance. In case of lifted bark the cambium frequently splits, part remaining attached to the wood and part to the bark. In such cases where the bark remains alive, wrapping or bandaging the trees or nailing the bark to the wood will be of considerable benefit by holding it in place and allowing it to become attached again.

The daily minimum preceding the coldest spell of two years ago varied from 32 degrees to 10 degrees above zero in those sections west of the Cascades, but east of the mountains zero temperatures were

low bottom lands in the milder climate, with its fall rains, the fact of their incomplete dormancy is hardly open to question.

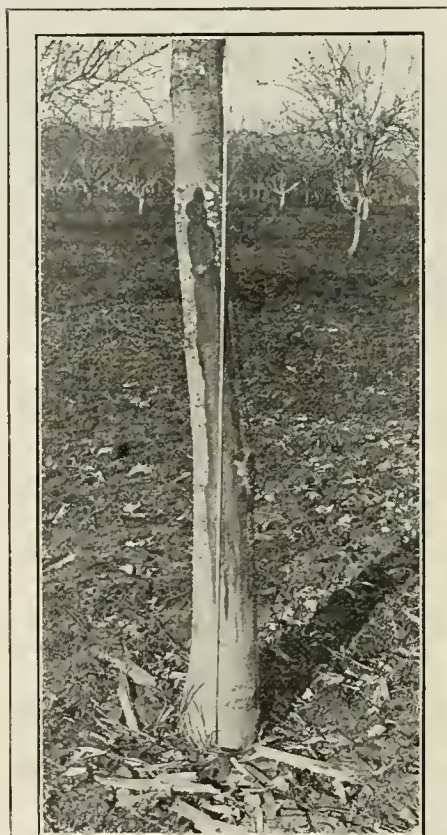
Growers stated that the trees dropped their foliage much earlier than usual and that, at the time of the freeze, were as dormant as they ever get. But that the trees were really dormant does not appear probable, in view of the character of the injury developed. The soil for the district is quite uniform, a sandy loam, sandy subsoil. In general clean intensive cultivation was practised. The topography of the land is very level, hence the air drainage is poor.

LET us consider some individual orchards as I examined them in 1920 to illustrate the effects of the freeze and factors influencing the treatment and recovery of the trees:

Italian prunes, 30 years old—When visited in February no injury was found below a point 10 inches from the ground, but from this distance upward the bark was discolored and rather dry and spongy, the injury extending outward on the main branches. The sapwood was not affected, but the cambium was discolored and appeared to be dead. The bark was frequently loosening from the wood. One-year-old wood was not affected and only about 25 per cent of the fruit-buds were killed. Old devitalized fruit spurs, so common in the average mature Italian prune tree of this region, the long slender spurs that hang pendant, were frequently killed, being frozen through at the base. In July, when this orchard was again visited, many dead and dying branches were found. A part of it had been pruned during the latter part of June, removing all branches that looked "sick" at the time, but inside of ten days other branches on these same trees had reached the same condition. Considerable barnyard manure had been used on this orchard in recent years and the injury was worse in the section that received manure containing sawdust and shavings as litter. This material would tend toward an acid soil condition and it may be that trees growing on such soil are less hardy, but further study is needed to verify this point.

Cherries, 9-year-old Lamberts, Bings, and Royal Anns—In February most of the trees showed the bark loosening on the south side above snow line and the cambium region was discolored. Lambert fruit-buds were dead, likewise most of the Bings, but the Royal Anns appeared to be more hardy and only about 50 per cent of the buds were dead. By July the bark on the south side of the bodies had burst and peeled back from the wood. On the under side of this loose bark, however, had formed a most remarkable callous growth, often fully an inch thick. Had this bark been nailed back in place it would soon have become attached again and the

(Continued on page 18)



This seedling Franquette walnut tree at McMinville was saved by stump grafting after being killed to snow-line.

experienced before December 1, and up to the time of the extreme drop. The drop to this minimum was therefore more sudden and generally greater in the west side districts than in Eastern Washington. The suddenness of the drop in itself probably was of some moment in the production of injury, since trees in a particular condition of dormancy require particular temperature to adversely affect them.

It is quite easy to see why the trees in the milder Coast climate were much more severely affected than those growing east of the mountains. In the latter case they had become inured to greater extreme of temperature since they were planted and they were subjected to a gradually increasing degree of cold and had a chance to develop a gradually increasing degree of dormancy, whereas, in the case of trees growing on

Suggestions for Pruning Apple Trees

By O. B. WHIPPLE

Formerly Horticulturist, Montana Agricultural Experiment Station

IN THIS discussion on pruning I propose to confine myself almost entirely to problems relating to the pruning of the apple. I believe that some fruit growers are poor pruners because they lack faith in their pruning ability. Many a tree goes unpruned because the owner feels that there are mysteries in the art of pruning of which he knows nothing and that the tree is better off unpruned than wrongly pruned. Too often the same grower will turn his trees over to some itinerant pruning expert, so-called, who, barring his nerve, is no better qualified to do the work than the owner himself. To be a good pruner one must understand the principles; he need be a good observer and experience is of course helpful, but after all there are not many mysteries involved.

Inconsistency in pruning is another fault of many pruners. I do not refer to those cases where through miscalculation or lack of experience the tree is allowed to become too thick and must finally be severely pruned to be properly thinned out. There are many who just don't get around to prune every year. Such spasmodic pruning tends to keep the balance between growth and fruitfulness more or less upset and it certainly does not lessen the labor involved. Moderate annual prunings will give much more satisfactory results than those of the spasmodic nature. Too frequently severe prunings may come at the wrong time. For instance, how many times have you heard the fruit grower say, "Well, I don't expect a heavy crop this year as I had a big one last, so I will take this opportunity to give my orchard a good thinning out."

There is no poorer time to prune the orchard heavily than the spring just preceding the off-year. A great majority of the fruit spurs bear only branch buds and the severe pruning may force many of these into twig growth reaching the proportions of water sprouts. If the heavy pruning is followed by favorable growing conditions the orchards may have another off-year the following season, the trees expending their energy in wood growth at the expense of fruit-bud formation. It is well to remember that fruit-buds for the season's crop are formed in July and August of the previous season. The one important condition favoring fruit-bud formation is an abundance of reserve food material. This does not mean that liberal applications of fertilizer will make the tree produce fruit-buds and fruit. This is not reserve food material and when combined with ample water supply may throw the tree into such rapid growth as to retard fruit-bud development. This does not mean that heavy pruning will increase the reserve food supply of the parts remaining and in-

duce fruiting; it is more likely to have the opposite effect.

By reserve food material we have reference to the elaborated food stored up in the tissues of the tree, food not used immediately in the processes of twig growth and fruit development. Conditions favoring the accumulation of this reserve food are good vigorous twig leaf development early in the season with conditions favoring only moderate growth during the season of fruit-bud formation in July and August. We must have leaves for the leaves elaborate this food and we must have new shoots for these bear leaves, but any system of pruning which prolongs the period of rapid growth beyond the latter part of July is opposed to fruitfulness. There can be no accumulation of reserve food material so long as the tree is actively engaged in leaf and twig development.

IF A HEAVY pruning becomes necessary the proper time to administer it is at the opening of the season when the orchard promises to bear a heavy crop. But here again we may blunder for promises are not always fulfilled and an untimely frost may remove the crop which would have acted more or less as a stabilizer and we are again confronted with conditions which favor the production of water sprouts rather than fruit-buds. We can well be more consistent in our pruning. Adopt a plan, follow rather a middle course, modify the plan as experience dictates, but don't swing from one extreme to the other.

But we can be too consistent in our pruning as well as inconsistent. Most fruit growers now appreciate that to develop a good framework we must prune the young tree severely. As we train the young orchard we unconsciously become devotees of severe pruning. As the orchard reaches the bearing age we hope for fruit, we even pray for fruit, but we forget the principles of fruit-bud formation. The only reason a young tree does not bear fruit is that it is expending its energies in twig growth and has no reserve for fruit-bud development. It grows early and late and so long as we continue the practice of severe pruning we are opposing fruitfulness. There comes a time in the life of every orchard when moderation must be practiced in pruning. Many of our younger Montana orchards are now in this stage. Once the framework is well developed we should do just as little pruning as possible until the tree shows signs of over-bearing.

Of course some pruning will be necessary to remove branches that interfere with others. But the plan should be to increase rather than decrease the number of growing points. We can do this by heading in

the small growth in the center of the tree rather than by removing it entirely. This small growth may be developed into the first fruiting wood of the tree. True, it may be necessary to remove this wood later, but it serves a purpose in aiding to bring about a balance between growth and fruitfulness which is long delayed if we continue the practice of severe pruning as outlined for the orchard during its formative period. There is really much to be gained in early fruit production if we properly preserve this small wood in the center of the tree. And let us not forget that the first three or four years should see the season of formative pruning past and the inauguration of another pruning program which will tend to reduce rather than encourage the growth of wood.

This period of moderate pruning may extend through the next four, five, six or seven years or even longer. It will depend upon how well the orchard is cared for in the way of irrigation, cultivation and fertilization. It may even depend upon the varieties planted. The passing of this period of moderate pruning will be plainly indicated by a tendency for the tree to bear heavy and light crops alternately, by an undesirable decrease in the size of the fruit especially during heavy fruiting seasons, and by a lack of twig growth. But when these signs indicate that the tree has entered into this period of fruitfulness we must not get over-anxious about pruning for here is where thinning may be practical with profit. It is well to maintain an ample supply of fruiting wood. In the first place trees so pruned will often go through periods of late spring frost and still bear a profitable crop, when trees stripped down to the minimum of fruiting wood will be thinned down seriously. We have all seen instances of where the orchard neglected as to pruning will bear a better crop such seasons than the orchard which has received more ideal treatment in this respect.

A GAIN if we are to secure annual crops we must maintain a greater number of fruiting spurs than required to produce a maximum crop. The fruit spurs of the apple and pear and even those of the plum and apricot are inclined to bear only alternate years. Theoretically then we must maintain twice the amount of fruiting wood required to produce a good crop. We must then see that not more than one-half of this wood matures a crop in any one season. I do not mean by this that such a tree properly thinned will always bear a crop of fruit. There are certain varieties in which alternate bearing can hardly

(Continued on page 21)

Northwest Fruit Exposition

THOSE who sponsored the Pacific Northwest Fruit Exposition, held in Seattle, November 21-30, were well pleased with successful results of the show. Attendance and interest proved so good that the exposition was continued three days longer than originally planned, up to and including November 30.

The Grandview district of Washington captured the coveted grand sweepstakes prize of \$1,000 cash and gold banner, for the best district display. Out of a possible 1,000 points this district scored 857.

Second in the sweepstakes competition was the Cashmere district, which scored 785 points and received \$500 in cash and a silver banner. Other district exhibits were scored as follows: Third, Lake Chelan, 761; fourth, Yakima, 751; fifth, Benton, 750; sixth, Walla Walla, 738; seventh, Methow, 723; eighth, Okanogan, 716; ninth, Clarke, 644; tenth, Wenatchee, 637.

The 1,000-point basis of scoring was made of 600 points for fruit, 200 for artistic merits, and 200 for commercial attractiveness and "selling power." The list of judges included talent from Washington, California and Oregon.

Grandview's exhibit was one showing

great banks of apples surrounding a map of the district. The serving of apple pie to each visitor admittedly added a number of points to the district's score, under the "selling power" of the booth.

The American Fruit Growers of Wenatchee carried away the grand prize of \$500 in merchandise for best individual display by a fruit grower. Peter Erickson of Vashon was second and H. W. Roberts of White Swan, in the Yakima district, was third.

Attractive daily programs of lectures, demonstrations and music were presented in connection with the exposition and there were two or three important banquets. Thirty "Prunarians" from Clarke county attracted attention when they attended in natty uniforms and distributed samples of Clarke county prunes to everyone.

Neither attendance nor number of exhibits from Oregon were up to expectations, but this was partially the result of storm conditions which prevailed during much of the time the exposition was in progress.

THE price of Pacific Coast cranberries was advanced 50 cents a box the first week in November, to \$5.50 per box, for the berries remaining in hands of the growers' exchange.

Nailing Apple Boxes

GOVERNMENT investigators have found that the right use of a few more nails in the apple box would prevent losses to the shipper running into thousands of dollars annually. Tests with standard packed boxes, ready for shipment, were conducted by means of revolving drums in which they were placed. Before they had gone a "journey" of average length in the machine most of the boxes had broken open and the drum was dripping cider.

On investigation it was found that usually the parts of the box to loosen and give way first were where the four nails were holding an edge. Two more nails were therefore driven into each nailing edge of the remaining boxes. With this simple change the boxes stood just about twice as much rough handling.

The Idaho State Seed show will be held at Idaho Falls January 10-13. Premiums amounting to approximately \$1500 will be distributed to competitors from the United States and Canada. Last year 34 Idaho counties were represented and it is believed the number will be greater this year.

You will want to send copies of the Homeseekers' number of *Better Fruit* to some of your friends. Order them now while you have it in mind.



Photo taken at planting of first tree in large orchard of Coates "1418" prunes, started at Orenco, Oregon, by the Oregon Nursery Company. In the foreground, left to right, are these participants: A. C. Coupe, mayor of Orenco; J. W. Shute, Hillsboro banker; M. McDonald, president Oregon Nursery Company.—(By courtesy Morning Oregonian).

Bud Selection and Frequency of Mutations

By E. B. BABCOCK

University of California, Berkeley

THE efficacy of bud selection as a means of improving the type is dependent upon the occurrence of bud mutations; its practicability, upon their frequency. If the above statement holds as a general principle, and it probably does, it is obvious that he who would change existing varieties through bud selection must first discover bud variations, or plants that grew from bud variants, of a relatively permanent nature, *i. e.*, the bud variant must maintain its distinctive characteristics when multiplied by vegetative propagation.

Such a permanent bud variation, resulting from a mutation in some vegetative cell, is commonly called a bud sport, and the general occurrence of bud sports in plants is well known. Concerning the frequency of their occurrence, however, very little is definitely known, yet it is a subject of the greatest importance to horticulturists, who propose to improve our commercial varieties of tree fruits through bud selection.

Nurserymen, especially, should be keenly alive to the practical aspects of this question. Because of the successful demonstration of the value of bud selection in the citrus fruits, there is an increasing tendency among nurserymen to propagate standard varieties of all tree fruits from selected trees which are known, either from mere observation or actual performance records, to be consistent high producers. Of course, such selection of high-yielding stock trees is commendable, provided proper precautions are taken to insure trueness of type for the variety in regard to characters other than yield.

Date Prune Planting

APPROPRIATE ceremonies attended the planting of the first Coates "1418" prune tree by the Oregon Nursery Company, in the big commercial orchard of this particular prune it has started at Orenco, Oregon. The tree was planted on October 29. The ceremony was witnessed by many interested fruit men including Henry E. Dosch, representing the State Board of Horticulture.

It had been hoped that Leonard E. Coates, originator of this commercial prune with the date flavor that now bears his name, would make the trip from his home in California to be present, but he was unable to do so.

The Oregon Nursery Company has obtained exclusive propagating rights for the Coates prune and, according to M. McDonald, president, intends to develop large orchards of this variety at different localities of the Northwest adapted to its culture.

Such nursery stock can then be offered as first-class stock of the variety, but nothing more until it has been proved by performance tests of the budded progeny that the character of high yield is actually transmitted. This is what too many nurserymen fail to appreciate and they are rushing pell-mell into an expensive campaign of searching for high producers, with the avowed intention of representing the budded progeny as of superior merit because of the high yield of the selected parents!

A general warning as to the importance of using proper methods when attempting to carry out in deciduous fruits what has already been accomplished with the citrus fruits was given by Shamel in his paper before the American Society of Horticultural Science last year. It is the purpose of this paper to emphasize the existing uncertainty as to what can be accomplished through performance records and the propagation of selected high producers among the deciduous fruits. The motive of the paper is not to discourage extensive experimentation in this field.

The more well-planned and carefully executed experiments the better, especially if they are fully reported, with adequate data on the performance of the budded progeny in comparison with the parent trees. But the whole question of the practicability of increasing the yield of deciduous varieties through bud selection is still unanswered, and it is this aspect of the subject which it is the duty of horticulturists to keep before the nurserymen and the fruit growers. Following are some of the reasons for maintaining an attitude of suspended judgment on this question.

BOTH species and varieties differ as to the frequency with which bud mutations occur. We are greatly in need of actual data, but presumably there is no horticulturist who would venture to assert that bud sports are as frequent in any deciduous fruit as they appear to be in several of the citrus fruits. Thus far, only two varieties of orange, two varieties of lemon and one variety of pomelo have been intensively studied, and we do not know that bud mutations are as frequent or of as great practical importance in other citrus varieties as they appear to be in the five California varieties with which Shamel has worked. But even though all citrus varieties are found to be inherently prone to mutate frequently in their vegetative tissues, it would not necessarily follow that any varieties of apples are equally apt to do so.

Furthermore, even if one variety of apple were to produce many bud sports it would be unsafe to infer that all other

varieties were equally variable. Of course it is well known that in apples, plums and other deciduous fruits new varieties have arisen as bud sports. But the number of varieties arising in this way is relatively small and it is therefore fair to infer that vegetative mutations which favor or cause high productivity are also relatively rare. The point I am making is simply that as yet we lack sufficient data to justify any conclusion regarding the practicability of increasing the yield of deciduous fruits through bud selection.

The danger in assuming close similarity between deciduous and citrus fruits as regards the practicability of isolating high-yielding strains through bud selection is further emphasized by the few experiments that have been made with deciduous fruits. The outstanding work of Whitten in Missouri, Gardner in Oregon and Crandall in Illinois, all gave negative results in the apple, and in the strawberry only one positive case was reported and that resulted in deterioration of vigor and lowering of yield. While these experiments were of limited scope, only a few varieties being represented, and similar experiments with other varieties may give very different results, still it must be admitted that thus far experimentation has tended only to increase our doubt as to the practicability of increasing the yield of standard varieties of deciduous fruits through bud selection.

THE question of the frequency of mutations has received some attention from geneticists. Without going into details we may consider the general bearing of the *Drosophila* investigations on this subject. The students of heredity in the po-

Land Show Awards

THE number of fruit exhibits at the Land Products Show, held in Portland in connection with the Pacific International Livestock Exposition, was not so large as it would have been but for the threatened railroad strike. Despite intervention of the strike talk the show was a success, exhibits of fine quality filling all but a few feet of the available space.

Sweepstakes prize, for the best 25-box entry of apples, went to the Hood River Apple Growers' Association. T. A. Sammis of The Dalles was a close second. In the five-box display, Dewey Gasson of The Dalles won first.

The Medford district showed up well in the one-box displays of various varieties. The Medford Orchards won first on Hoover Reds; the Monitor Orchards, first on Ganos, and C. Y. Tengerwald, first on Bellflowers.

mace fly have reported about 300 different mutations in the one species studied extensively, and during the period of investigation they have counted approximately 30,000,000 flies. This gives a frequency of one mutant in 10,000 flies. But many mutations appear more than once and some are of such an insignificant character that they are not reported, so that they claim a frequency of one mutation in every four or five thousand flies.

If we assume for the sake of argument that the same frequency of mutations obtains in the apple, how many trees would have to be tested in order to discover one high producer which is in a true, hereditary sense superior to other trees and hence capable of transmitting its character of high yield to its budded progeny? Obviously we could not expect to find one among 4000 tested trees, because many factor mutations affect only some morphological character or characters and do not affect yield and that every other one of these tends to increase yield, we have already increased the number from 4000 to 16,000 trees which must be tested in order to discover one truly superior tree.

WE might pursue this line of hypothetical reasoning much farther, comparing the number of chromosomes in the apple or the plum with the number in the pomace fly with reference to the known rate of mutations per chromosome in the latter and the number of bearing trees of the former now in existence. But it all points to the same general conclusion, to wit, that the geneticist can not hold out much encouragement to those who propose to locate genetically superior deciduous fruit trees by means of performance records and progeny tests.

The present tendency of nurserymen to advertise stock grown from known high producers as capable of furnishing orchards that will yield more than orchards grown from first-class stock from healthy trees that are typical of the variety, should be discouraged. Such inferences are at present unwarranted. There should first be some well-planned experiments on typical orchards of all the principal deciduous fruits. Then, if the results of these experiments are such as to indicate that performance records and progeny tests are worth having in deciduous fruits, it should not be difficult to interest the growers.

However, the keeping of performance records of orchard trees may be well worth doing by every orchardist if only for the purpose of eliminating drone trees. After performance records had been kept for several years by many growers, it should be possible to locate a large number of outstanding trees which could then be propagated for testing. It is desirable that some of our experiment stations undertake investigations in this field in the near future, and because of the wide range of materials

to be covered and the length of time involved, it is a very suitable field for cooperative investigations.

None of the foregoing statements should be interpreted as antagonistic to the idea that bud selection is an important phase of modern fruit growing. The regular practice of bud selection should be encouraged because it will assist in holding varieties true to type and it will increase the chances of discovering new and possibly valuable bud-sports. But the mere fact that bud selection is practiced is not sufficient to warrant any claims to special or unusual merit in nursery stock. The super-yielding tree of apple, peach or plum, which will beget a super-yielding orchard, has yet to be discovered.

Shippers Win Point

A PRELIMINARY victory of some consequence to fruit shippers of the Yakima valley was won recently in the suit of the Earl Fruit Company of the Northwest vs. the Northern Pacific Railway. The case was tried in the circuit court of Multnomah county, Oregon, and the shippers' victory has significance for fruit men of the Northwest in being one of few decisions given against a railroad in such actions.

The court and jury granted a judgment of \$1,900 to the plaintiff on claims involving three carloads of boxed apples shipped out of the Yakima valley in November, 1917. The fruit was shipped in box cars, under shippers' risk option No. 1. The railway company insisted that the shippers assumed all risk from freezing. The fruit company alleged that the railroad company was responsible, since the freezing occurred after an unexplained delay to the shipment. The jury was convinced that, had there been no delay, there would have been no injury to the apples.

The case revives recollections of numerous similar losses experienced by shippers of the Yakima valley in 1917, when the carriers refused to grant privileges of carriers' risk, under option No. 2, and hundreds of carloads of fruit were lost in box-car shipments. Extension granted by the 1920 transportation act gives any such shippers about two months yet in which to file suits on those shipments.

A test case in the state of Washington, brought by the Pacific Fruit and Produce Company, resulted in a victory for the Northern Pacific in the state supreme court. The Northern Pacific has made a motion for a new trial in the present suit and this has not been ruled upon. Arthur M. Geary, of Portland, presented the shippers' case and J. W. Quick, of Tacoma, represented the railroad company.

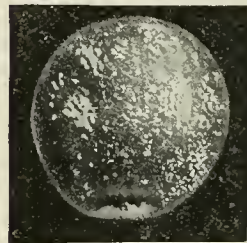
BEFORE using a disinfecting spray in a hen house or coop be sure to remove every particle of filth or rubbish, otherwise the spraying will do little if any good.



ALBATROSS BRANDS

How to prevent the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in spots—or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.



Note the "blotch" or "burn" of the lead on this apple

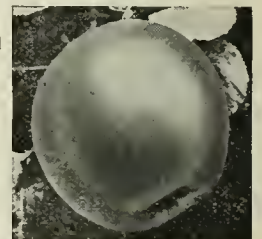
ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.

Directions sent with each order



Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. Bbl. Boxes 2 lb. Pkgs.
22¢ lb. 24¢ lb. 25¢ lb.

Freight prepaid to Northwest points.

NOTE: If you use Casein, Albatross Superfine, is the brand to buy. Very finely ground—quickly soluble when mixed with alkali.



—for storage plants, packing sheds, etc.

During the last six years a very large proportion of the major industrial plants, warehouses, lumber mills and canneries (list on application) have been made "spick and span" with Albatross Cold Water Paint. This paint is very economical to use—dries snow white—will NOT peel or rub off—retards fire—easy to apply—and when properly applied, reduces insurance rates. Has remarkable spreading and covering qualities—will work over wood, rock, plaster or other material. For almost any kind of commercial interior, Albatross Cold Water Paint is unequalled. Extensively used in the fruit world for storage plants, packing sheds, etc. Tell us your requirements—we can meet them to your complete satisfaction. General Basic Products Co., Sole Manufacturers, 2926 16th Ave. S.W., Seattle, U.S.A. Dealers: Address us for attractive sales proposition.

Elemental Treatise on Pruning the Apple

Prepared by STAFF WRITER

Here and there a man who starts to read this detailed discussion of the subject of pruning the apple tree is likely to say: "Nothing in this for me—I know all this already." Granting that he spoke the truth, this magazine is amply justified in running the article for its value to the many new subscribers it is always gathering—many of them perhaps new in the apple-growing game. However, some of the things here presented are fundamental and, as such, cannot too often be reiterated and borne in upon even the experienced apple grower. The article deals quite fully with pruning in all its relations to production of a maximum of sound fruit. It has also the merit of being written in plain, understandable language.

reduce the vitality, unless the nutrition of the tree is injured; but greatly increases the vigor by concentrating the almost constant food supply into the fewer remaining branches. The nutrition of the tree may be injured by such severe pruning as to remove an excessive amount of leaf surface. The leaves serve to combine the soil solutions and the carbon of air into sugars and starches which form the plant's food. The removal therefore of the greater part of the leaf surface will interfere to some extent with the vitality of the plant by preventing a sufficient amount of elaborated food from being formed and distributed over the plant.

Reasons for Pruning—The purposes of pruning should be thoroughly understood before one can hope to prune intelligently or attain the best results. It is better to understand the reasons and purposes than to know the rules of pruning. In fact, no set rules can be made, because the purposes of pruning and the conditions under which to prune are so varied that each tree becomes a

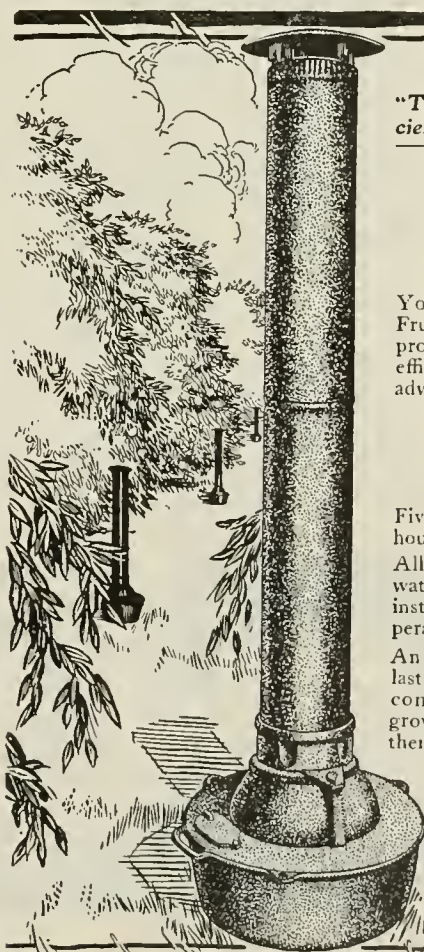
special problem. Get the interests of the tree thoroughly in mind, study the reasons and effects of pruning; and have an ideal toward which to work.

Prof. Wickson of California gives the practical purposes to be served in pruning as follows: "(A) Convenience of the grower, (B) Health and strength of the tree, (C) Regulation of heat and light, (D) Attainment of size in fruit, (E) Attainment of strong bearing wood, (F) Promotion of regular bearing."

Convenience—Low headed trees where most of the work is done from the ground, are most quickly, cheaply, and efficiently handled in all the orchard operations of pruning, spraying, fruit thinning and picking. The lower the fruit can be grown, yet not interfering with cultivation, the more profitable it is. One often hears it said, "There is no profit in fruit which cannot be reached from a ten foot ladder." This profit line is apt to be quite low in times of close competition and every effort

UNTIL recent years, in fact until the advent of commercial orcharding about the middle of the nineteenth century, popular opinion was adverse to pruning on the ground that it was unnatural and caused the plant to suffer from shock and loss of vitality. Pruning cannot cause shock as the plant has no nerves; and the practise is natural for nature prunes most relentlessly. Look at the forest tree. What became of the thousands of buds and small growth which once existed along its naked trunk and branches during the early stages of development? There was a constant struggle for existence, each individual twig or branch striving for light, space and nourishment. As the competition became keener one after another was forced to succumb. There is a survival of the fittest. This is nature's way of pruning.

Effect of Pruning on Vitality—There is an exact balance between the feeding capacity of the plant and the superficial growth. The larger the food supply the larger the top. If part of the top is removed there is an endeavor to supply the deficiency by a very rapid growth. The loss of tissue is of no consequence and does not



"Tests on Oldsmar Heater show 100% Efficiency."—Prof. Peeples of Armour Institute

Frost Insurance at Minimum Cost

You insure your house, why not your crop? Fruit growers everywhere can have assured crop protection through the use of this improved and efficient heater which has a number of notable advantages over any other kind.

Oldsmar Frost Protector Costs Less To Operate

Five gallons of distillate fuel oil burns 10 to 15 hours according to temperature desired.

All cast iron (stack excepted), the Oldsmar is waterproof and cannot get out of order. Lighted instantly, it requires little attention and temperature regulation is positive.

An Oldsmar costs less than other cast iron heaters, lasts longer, requires fewer to the acre; affords complete protection — California and Florida grove owners and truck farmers are ordering them by thousands.

Write today for literature and full information about how the Oldsmar can protect your crop

Oldsmar Tractor Company
Oldsmar, Florida
Kell-Oil Heater Company
Coldwater, Michigan

Apple Growers and Shippers

Do you desire MODERN up-to-date Cold Rooms for Apple Storage under expert supervision?

For Rates and Particulars apply to

Fourth St. Warehouse & Cold Storage Co.

Phone Broadway 4300 or 1850
Fourth and Hoyt Streets, Portland, Ore.

O. V. BADLEY COMPANY

Distributors of Oldsmar Products

425 East Morrison Street

Portland, Oregon

should be made to keep the fruiting wood low.

Strength—Make the tree strong and stocky so it will hold up a maximum load of fruit with as little artificial propping as possible. Most varieties will bear more fruit than they can hold up. Strong stiff obliquely rising growth sustains weight much better than horizontal branches but is more apt to split at the crotch. A combination of the two is desired. Start the branch out more horizontally and turn it upward gradually as it becomes smaller and weaker. This will give the strongest effect. Avoid starting two or more of the main branches near the same point on the trunk in forming the head as a weak crotch is apt to result. They should issue in a whorl at least six or seven inches apart.

Crooks in the limbs are slightly conducive to strength and fruitfulness, as the downward flow of the sap in them is more restricted.

A tree will hold up a heavier load if part is distributed throughout the central portion of the tree.

LIGHT and Heat—Usually the fruit of the highest color, size and quality is in the top of the tree where the light conditions are best. Prune to keep the form open enough to admit sufficient light into the more profitable lower and interior parts of the tree. Light is not only essential in properly coloring the fruit but is most necessary in the digestion of the plant food in the leaves.

In California and climates of high summer heat, it is necessary to prune less open, growing a denser top to shade and protect the trunk and branches from sun scald. In most localities of the Pacific Northwest where there is little damage from heat, one should strive to give as much light as possible to the fruit and foliage.

Health and Vigor—Trees have a tendency as they grow older, to become less

thrifty and vigorous and to produce smaller fruit. Such trees make very little wood growth and usually receive very little pruning. The pruning should always be sufficiently heavy to stimulate a healthy, vigorous growth. This is particularly important with small varieties as the Wine-sap which becomes almost unmarketable on old weak trees.

Vigorous trees are less susceptible to the ravages of borers and some fungus diseases.

Size of Fruit—Pruning affects the size of fruit in two ways: First, by keeping the tree vigorous and healthy; second, by thinning the fruit. Fruit thinning is in reality pruning, but will not be discussed in this article.

Thinning may be more or less minimized by antecedent pruning. Shortening or thinning out bearing branches or removing fruit spurs when clearly seen to be in excess, keeping only sufficient bearing wood to correspond with the size, vigor and bearing habit of the tree is advisable.

Bearing Wood—The fruiting habits of trees may be corrected by regulating the amount of bearing wood. On heavy bearing, early fruiting or weak growing varieties practice heavy winter pruning to discourage the formation of fruiting wood. On shy or tardy bearers, which are usually strong rampant growers, fruiting can be stimulated by practicing light summer pruning and no winter pruning. Tipping back or pinching off the growing tips is conducive to lateral growth which may result in fruit spurs. By repeatedly pinching back water sprouts may develop into good fruiting wood.

Regular Bearing—A tree producing an excess of fruit is seldom able to perfect good fruit buds for the following year. Hence a heavy crop is usually followed by a light one. Any of the numerous causes, including irregular pruning, lack of thinning, and various cultural methods and climatic conditions which produce either a

heavy or a light crop will tend to start the irregular fruiting habit.

To break the alternate year bearing habit, summer prune and thin during the season of heavy bearing, and winter prune after the short crop. The habit is most easily overcome by annual thinning. Moderate annual pruning is conducive to regular bearing.

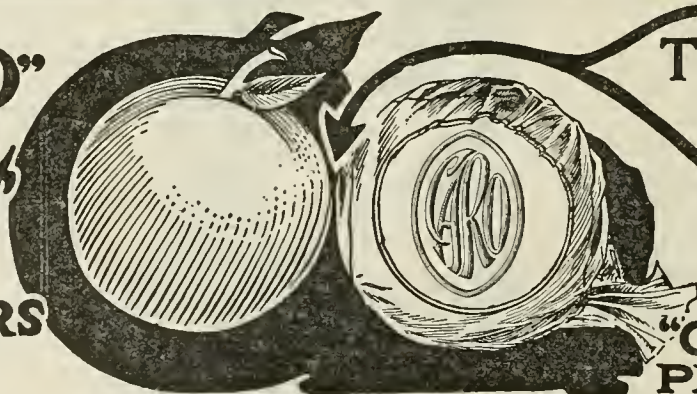
SYSTEMS of Pruning—There are but two main systems of pruning, the central leader and the open head, although there are several modifications of both. Either system will give good, strong, heavy bearing trees if properly pruned.

Central Leader System—The leader or pyramidal type forms the tree into an approximate pyramid, with branches along a central stem. In comparing this system with the open head, it has the advantage in that a stronger tree can be formed. The load of fruit is distributed over a larger number of branches issuing at intervals, thus reducing splitting at the crotch.

The objections to this system are: First, the lower branches are apt to grow more horizontal and when loaded, droop and interfere with operations; second, the top where the best fruit is eventually produced is higher; third, the fruit is poorly distributed, there being very little and poorly colored fruit in the lower interior portions where it is most profitably grown and easily held up by the tree, and an abundance at the top and out on the weaker ends of the branches; fourth, the light conditions are not as good, for the drooping of the loaded branches more or less cover and shade the fruit beneath.

Open Head System—The open head is the opposite of the central leader type. The central stem is done away with and the head is formed on three to five, preferably four, main branches which issue near the ground and rise obliquely, forming a more or less inverted pyramid or vase shaped tree. The

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

center which is more or less open is filled with fruiting wood. This is by far the better system and is used almost entirely in commercial plantings. It brings the head with the fruiting wood nearer the ground which greatly facilitates pruning, spraying, thinning, and picking. The branches rise obliquely and are less liable to break when loaded or droop to interfere with operations. The head is more open, giving a better distribution of light to the interior portion of the tree. As the fruit matures, the heavily loaded scaffold branches tend to spread, admitting more sunlight to color the interior fruit. Thus the open head system gives better light and air conditions to a larger leaf and fruiting surface, producing more first class, highly colored fruit.

If attacked by blight the open-head tree would be preferred, as most of the fruit spurs and growing tips through which the blight generally enters are lower where the disease could be more easily detected and controlled. Should the leader of a pyramidal tree be attacked seriously enough to necessitate its removal the tree would be ruined. But the other type having several scaffold branches or trunks, one might be spared without seriously crippling the tree. Where blight is prevalent the lower parts of the scaffold branches should be kept free of fruit spurs and small growth, keeping the fruiting wood of the lower interior on sub-branches.

Artificial Support—Under some conditions, with weak growing, heavy bearing varieties or varieties which tend to form weak crotches as the Winesap or King, it may be necessary to give artificial support to the open center tree. Propping with poles is not practical as it is expensive, unwieldy, temporary, and inhibits orchard operations in general.

There are advocates of a system of wiring, the wires remaining permanently in the tree. A twelve-gauge galvanized wire is fastened from a central ring to each main branch by means of screweyes. The wires should be placed as high as possible to give strength and yet not be fastened to branches under one and one-half or two inches in diameter. The wiring costs about twenty cents per tree and will last a lifetime. The wires do no damage and are a handy means of support to stand upon while pruning, thinning, and picking. Some trouble is experienced, however, in the limbs breaking at the point where the screweye enters.

For heavy or early bearing varieties or in districts subject to sleet and heavy snows in winter it will be necessary to add temporary support to the trees too small to receive the permanent wire supports. Tying soft spun two-ply hemp or manila twine between opposite branches is satisfactory and cheaper than props. It lasts three years and costs about five cents per tree.

Another method of support is to bolt opposite branches together immediately above the crotch.

(Continued on page 20)



What You Lose in using cheap paint—do you know?

GOOD paints require much thought and time in their preparation. That is why you should insist upon purchasing paints that have a reputation.

We make good paints like this—to save you money; and we call them Fuller's Specification Farm Paints because we have made them especially for farm use.

We use pure PIONEER WHITE LEAD, pure linseed oil, zinc and color in scientifically exact proportions, arrived at through 72 years' experience.

The lead is made so fine that it will pass through a silk screen of 40,000 meshes to the square inch. That means covering capacity and ease of spread.

A special device super-purifies the lead, making it "whiter" so Fuller colors are exceptionally clear-toned. All ingredients are thoroughly mixed in specially designed machines, so the paint is always uniform.

The result on the house or barn is an elastic, tough, protective coat that stays five or

more years, keeping the wood like new.

Some figure paint economy as "cost per gallon." That is wrong. For "cheap" paint doesn't cover so much surface—you buy more gallons. "Cheap" paint spreads less quickly and you have more labor cost. So "cheap" paint applied is no less expensive than the best.

"Cheap" paint on the average starts cracking in twelve months while the best paint stays intact five or more times longer, if properly applied. Figure then the cost per year of service and decide how much you lose when you use cheap paint. Don't allow surfaces to rot. It costs less to paint them.

All "Fuller" Specification Paints are made the costlier way for your economy. Be sure you get them when you paint.

All "Fuller" Specification Paints are made the costlier way for your economy. Be sure you get them when you paint.



Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint

Manufactured by W. P. Fuller & Co., San Francisco
Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and PIONEER WHITE LEAD for 72 Years
Branches in 16 cities in the West--Dealers everywhere--Established 1849

Send Coupon For
Interesting Book
FREE

Mail coupon for "Save the Surface"—a free book that tells of the importance of good paint.

We'll send also our booklet describing Fuller's Specification Farm Paints, Varnishes, etc. Send coupon now. Find out what good paint means to you.

W. P. Fuller & Co.

Dept. F, 18, San Francisco

Please send me, without charge, a copy of "Save the Surface" and your booklet of farm paints and varnishes.

Name.....

Street.....

City.....State.....

Slipshod Practices in Marketing Fruit

By W. B. ARMSTRONG

President Washington State Farm Bureau, Yakima, Washington

FULLY to describe the lack of order in the distribution of the perishable food stuffs grown in this country would be impossible and to attempt such full description would result in a tiresome impeachment of our civilization which has permitted the greatest disorder to remain in the distribution of the food of the people.

A few statements will illustrate the disorder, and while they are drawn from experience with apples, please remember that exactly similar happenings occur to all raw food stuffs, whether they be apples or onions, turnips, squash or potatoes, poultry or eggs.

The national apple crop of 1920 will be remembered as the largest for almost 20 years, and as our Northwest crop moved to market we found that a number of centers of distribution were becoming badly glutted.

By the first of this year losses, due to lack of what I will call pre-vision in shipping, must have aggregated fully \$1,000,000 to growers and shippers of Washington alone.

The storage facilities of Fort Worth, Texas, were piled up with excess shipments of Northwest Jonathan apples, while, to my knowledge, there were still unfilled orders for that variety in the hands of shippers.

It is impossible, of course, to trace back the ultimate loss, but when it is understood that 95 cars of Jonathans were in storage in Fort Worth late in December, it will be realized that tremendous loss was experienced from that point alone. The presence of so many Jonathans there closed the markets of that region to later varieties, causing further loss—indirect loss, of course, but nevertheless very important.

Kansas City was another center where the glut exceeded that at Fort Worth, and conditions at Pittsburg, Chicago and other places only repeated with little variation, the same tale.

My own observation and that of many others show that in the middle and eastern states in the spring of this year apples were being retailed at exorbitant prices and it is undoubtedly true that nearly all of our apples of that 1920 crop were consumed at tremendous prices. Some said "over-production" caused the disasters to our 1920 crop. I assert that, in view of the facts I have related, such description is unwarranted, and to make my position stronger, if need be, will say that I have knowledge of large areas of Illinois, Iowa and other middle states, which were almost entirely without a supply of either eastern or western apples.

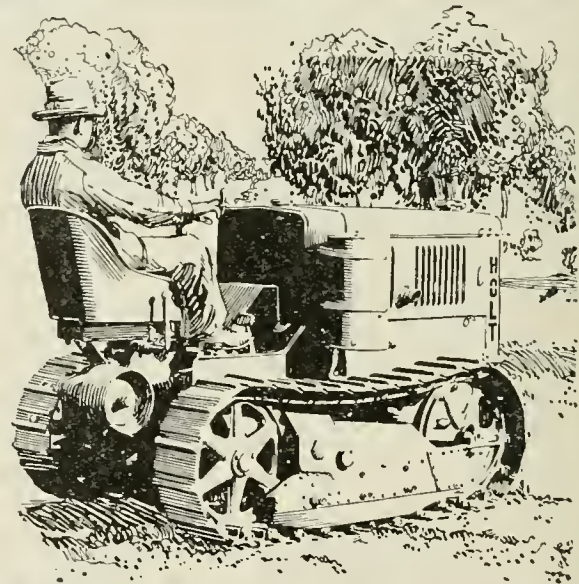
The easy-going minds that said "over-production" last spring, looked forward to a certainty of better distribution with the present crop which is the smallest the coun-

try has had in years. What do we see but the same disorder—shipments made without any knowledge of the conditions of demand and supply at their destinations, cars arriving in large numbers at centers of distribution already flooded, and retail prices kept sky high and proving a barrier against consumption.

YOU well know that a very short run of such disorderly marketing would mean the swift ruin of any manufacturing con-

cern. A parallel to such unbusinesslike practices cannot be found in any other industry because in all other industries those whose money and time are tied in them feel a responsibility for the successful merchandising of their product. Indeed the industries of which I speak are built right around a selling plan.

Suppose you were in the commission business in Pittsburg and that you had put your money or your credit into a purchase of five cars of Jonathans only to learn soon after that a large number of cars loaded with the same apples were rolling toward you unsold. Suppose that each morning a bright and breezy broker called with a list of unsold cars, any or all of



The New Leader Among Small Tractors

Now at last you can secure in a small tractor all those qualities of long life, low upkeep cost, economical operating expense that have for years featured the larger models in the "Caterpillar" line. Only the extensiveness of Holt experience and the thoroughness of Holt experimental work, together with the development of new qualities of steel and better methods of heat treatment, made possible a small tractor that would live up to Holt standards. Size has been limited without sacrifice of power—weight has been reduced without imperiling strength.

The new "Caterpillar" T-35 Tractor is only 48 inches wide and 52 inches high, weighs but 4000 pounds, yet develops a liberal surplus of power over its 14 drawbar-horsepower rating.

It has been tried, tested and proven—meeting the exacting Holt standards of economy, durability and dependability. Send at once for complete information. Be ready for winter work with a new and better way to get it done.

THE HOLT MANUFACTURING COMPANY

Stockton, California Peoria, Illinois
Spokane, Washington Los Angeles, California San Francisco, California

CATERPILLAR

Reg. U.S. Pat. Off.
T-35 Tractor

which you or your competitor are asked to bid upon. You would draw no comfort from the fact that this same list is a duplicate of the ones that other brokers are peddling all over the country, but you would settle down in gloom—say to yourself, "Never again will I buy a stock," and from that time to the end of the season order with the utmost conservatism.

If you were dishonest you might attempt to recover your loss on the first purchase by ordering and then turning down cars for any old cause in the hope of making some illegitimate gain.

Any who have been wondering why I have not said more about the retailer must realize that it is almost entirely up to the consuming public to regulate that branch of the trade. Some practical suggestions have been made and it is probable that much can be done by the grower to assist in regulating the great spread between the jobber and the consumer, but I repeat that the solution of the difficulty is mainly in the hands of the public.

Last April there was assembled in Chicago representatives of the various fruit growing districts in the United States. It was decided to place this matter of distribution before President Howard of the National Farm Bureau. He was asked to appoint a committee of 21 persons, thereby giving representation to the various fruit growing districts of the country. This task he has accomplished.

Meetings of Interest

PROGRAMS of two meetings, which would readily have been given space in these columns last month, were not completed until mid-November. Sessions of the Oregon State Horticultural Society at Forest Grove will be ending as this issue reaches the hands of most subscribers. The dates of this, the thirty-eighth annual meeting of the society, were December 1, 2 and 3. An array of able speakers and practical topics were listed on the program.

On November 29 and 30 the Western Walnut Association, which includes in its membership walnut and filbert growers of the Northwest, held meetings at the Chamber of Commerce in Portland. C. A. Reed, nut specialist with the United States Department of Agriculture, returned here, following his recent investigations of the nut industry of this region, to be the principal speaker.

The British Columbia Berry Growers' Association, recently organized, this year has handled about 500 acres of fruit. The total tonnage estimated for the year is 2,500 tons. The new association is composed of 13 berry marketing organizations that were already in existence and will act as the central sales selling agency. H. A. McNaughton of Gordon Head, Vancouver Island, has been appointed sales manager of the new organization.

Australian Tests

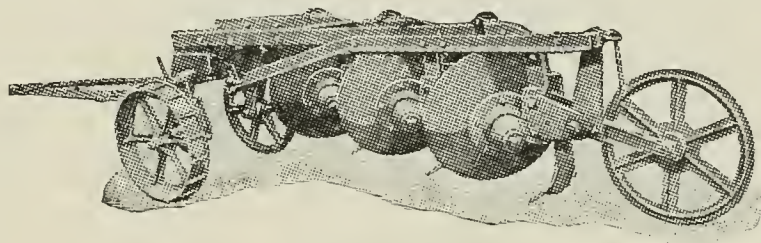
THE South Australian government is doing valuable work in the interests of primary producers through the tests and experiments being carried out in its experimental orchards at Blackwood, where fifty acres are incultivation. A total of more than twenty different kinds of fruit are grown there in 4829 different varieties.

The following trees are grown for testing purposes (the figures in brackets indicate the number of varieties cultivated): Peaches (525), nectarines (83), apricots (125), plums (401), cherries (294), olives (35), almonds (50), persimmons (44), figs (205) loquats (18), apples (1826), pears (1014), quinces (42), nuts (50), oranges and mandarines (75), lemons and limes (17), other citrus fruits, including pomelo, shaddock, kumquots, etc. (25).

Foolish Competition

CITRUS LEAVES realizes that ships alone will not solve the question of our trade relations with the Orient. The securing of a balance between imports and exports is first necessary. Foreign trade can not be developed over night. It must come about through a gradual and slow process. The narrow-minded competition between the ports of the Pacific Coast must be eradicated.

Cities on the western coast interested in developing foreign trade must co-operate. From Puget Sound to San Diego, the spirit must be one of mutual assistance. Through this close co-operation our goods will be fostered in foreign markets, gradually absorbed and return cargoes disposed of here. Immense possibilities are open to us on the Pacific Coast. Are we going to meet this task.—Citrus Leaves.



The New McKay Disc Orchard Plow

Here is the latest and most improved development of the disc plow and subsoiler combined. It has been designed and built to embody every improvement. Its ease of handling and its greater adaptability to every condition of orchard, grove, vineyard or open field tillage are outstanding points that insure its increased utility.

THE ORCHARD PLOW AND SUBSOILER OF GREATEST UTILITY AND PROFIT

The McKay disc plow has been thoroughly tested under most difficult conditions.

The patented hitch permits plowing close to trees, throwing soil either direction. Front and rear discs cut outside of wheels, thus allowing closest plowing to and from trees and vines. Greatest offset without side draft on tractor. Built low and sturdy, the plow will work under trees without injury to branches or fruit. No projections of any kind above the beams.

The new McKay pulls straight on centers with no side thrust.

It is simple in construction, has but few parts—most of which are steel—and is noted for its unusual strength and endurance. There are no chains, sprockets, levers or gears. The patented power lift is sure and simple.

Attached subsoilers behind each disc break up the hard pan, but may be adjusted out of the way when desired. Greater clearance above and between discs permits turning of heavy cover crops. Full Timken bearings in all wheels and discs. Pivotal front truck allows tractor and plow to turn on narrowest headlands without straining beams.

TOWERS & SULLIVAN MFG. CO.
ROME, GEORGIA

Distributors for the Pacific Coast

R. M. Wade Co.
Portland, Oregon

H. V. Carter Motor Co.
San Francisco, Cal.

Arnott & Co.
Los Angeles, Cal.

Full descriptive circular and additional information sent upon request. Write to the distributor nearest you

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company

Twelfth and Jefferson Streets

PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York
JNO. D. ROSS.....608 Otis Bldg., Chicago

SAN FRANCISCO REPRESENTATIVE

EDWIN C. WILLIAMS
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. J. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

Seasonable Hints

Those readers who unfailingly keep things in spick-and-span shape about their orchards or ranches and who do the necessary task at the exact time it should be done may just as well pass this by. This is just a bunch of timely hints and, as such, can be of no value to any such paragons of efficiency.

It is a poor workman who finds fault with his tools, but it is a worse one who goes on a job with poor equipment.

If you do not use the best pruning tools obtainable you are missing much of the possible satisfaction of this oftentimes irksome job. Aside from the fact that the best tools make the work of pruning easier, a good pruner, whether saw or shear, is the one that makes the clean cut, while the poorly built tool almost always damages the limb stub.

Figuring an average of only 20 cuts to a tree, you would make between 10,000 and 12,000 cuts in a 10-acre orchard. If your pruners are worn or dull, or not properly constructed or adjusted to insure a clean cut all around, then you are sure to leave thousands of ragged,

disease-receptive spots to mar and cripple your orchard.

Use of an old, worn-out spray machine is another bit of false economy that practically assures trouble and loss. Not alone is it expensive in amount of time consumed, but also because of the inferior work that must result in loss of clean fruit.

If you did not clean up and repair your spray equipment and put it away in the best of shape when through with it you would be repaid even yet for the trouble of putting it in proper trim now, or at least well in advance of the time you must use it again. Time for the dormant spray, as you will recall, is not so many months distant.

Have you looked into the matter of fertilization with an open mind? Perhaps you have not realized that the day has gone when horticulturists took it for granted that these wonderful Northwestern soils would go right on producing bountiful crops without man's assistance. Hundreds of tons of fertilizers are now applied annually to orchards of the Northwest and their use is steadily increasing.

Thousands upon thousands of acres of land in Southern states was drained in days gone by of every vestige of fertility through continued cropping to tobacco or cotton without thought to replacement of the elements necessary to crop life. This condition is now being remedied, but the loss in the meantime has been appalling. Through the use of cover crops and commercial fertilizers lands of the South are once more being brought back to a state of fertility.

The lesson is too obvious to need elucidation. You will surely grant that there must be no repetition of any such stupidity in the Northwest.

Mythical "Ring"

It appears, after all, that the Chicago investigators of food costs thought they found something wrong with the Northwestern growers. One member of the committee which visited Coast cities made the allegation that the grow-

ers will sell their apples only to a "ring" of commission men.

The charge, were it proven true, would reflect more or less of discredit upon the growers and would possibly account for a part of any undue costs to the consumer.

Before those who know marketing methods and conditions in Coast fruit sections the charge fell as a "dud." The explanation of why nearly all the fruit produced here is sold to a comparatively few commission dealers is simple. They know the business and, more important in this phase of the matter, they have the funds necessary to handle carloads of fruit under conditions as they exist.

Individual would-be purchasers of fruit in car lots, the growers have found, almost invariably drop their plans when they find, for instance, that a car of apples at its eastern destination represents an outlay of approximately \$2,000. This money requirement is what keeps the individual from buying, and not an agreement among growers to sell only to a "ring" of buyers.

National Apple Day

It is a fact hardly to be disputed that National Apple Day was given little recognition in Western fruit-growing states this year. There were any number of communities where not the slightest observance of the day could be noted.

Several explanations may be advanced. Chief among them are the fact that most apple growers were too busy with their crops and a sort of impression that the observance is intended anyhow mainly as a reminder for consumers in the East. As to the first excuse, excellent reasons can be advanced in favor of a later date for apple day.

The fact remains, however, that if the nation is to be told that a certain day of the year is set aside in recognition to the apple and its value to mankind, those who are most vitally concerned should not slight and ignore the occasion. The impression thus given the consumer-public is anything but beneficial.

Send in a Letter

AS A REMINDER and incentive to influence many readers to send in "experience letters" to be run in the Homeseekers' number, coming out January 1, the prize awards offered are here listed again:

Ten dollars cash, first prize, for best and most informative letter.

Five dollars cash, second prize, for next best letter.

Two-year subscriptions and extra copies of the issue to all others writing acceptable letters.

The letters should deal with personal experiences in growing fruits, berries or nuts, or any combination of these. Location, dates, size of tracts, yields and figures on returns are needed to make the letters convincing. Read the article on filbert growing by Nat M. Norelius in the October number and you have an excellent illustration of how to detail your experiences.

Letters should not be over 800 to 1000 words long and should reach the editor not later than December 22. Have the wife or daughter pen the letter if you happen to be pretty busy. It will be a favor if you write on but one side of your paper.

Delay will make you too late, so sit right down and pen a letter that will give the eastern homeseeker first-hand information about what you have accomplished.

Any who do not send us an experience message, but who want extra copies of the number, can make sure of getting them only by ordering them in advance—right now.

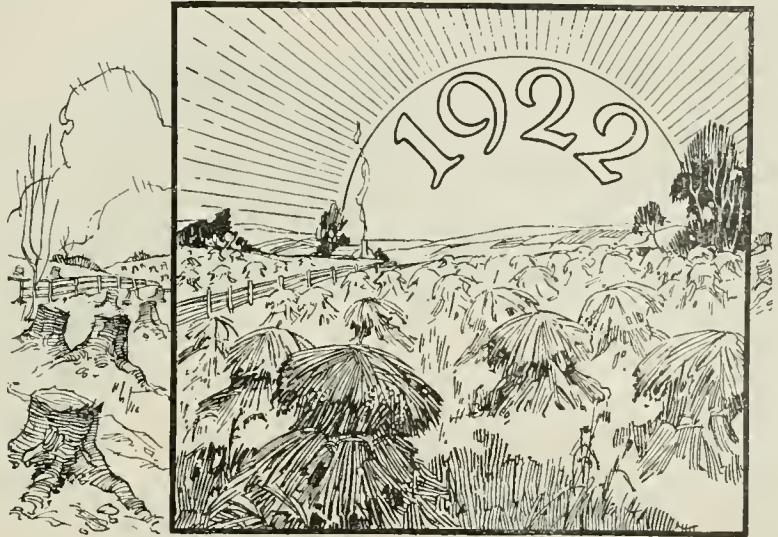
College Holds Show

AROUND a mammoth pyramid built from 6000 rosy-cheeked apples, displays of fruits, flowers and vegetables transformed the men's gymnasium into an Egyptian garden at the sixth annual Oregon Agricultural College horticultural show, November 4 and 5.

The sides of the "gym" were allotted to the four main divisions of horticulture: pomology, vegetable gardening, floriculture and horticultural by-products.

Sixty kinds of apples, produced chiefly at the college experiment station, 20 varieties of grapes, district displays of apples, a large exhibit of pears from the southern Oregon experiment station, 20 entries of walnuts, an odd lot of such nuts as the Kola, the Pili, and Paradise, and subtropical fruit comprised the exhibits prepared by the department of pomology.

An exhibit from British Columbia, sent in by William de Macedo, a student, won first blue ribbon in the district displays. A collection of Medford fruits, sent by Willette B. Murray, won second place. Professor W. S. Brown, head of the department of horticulture, judged the exhibit.



1922 Will Be the Northwest's Greatest Land Clearing Year

Hundreds of thousands of acres of waste stump land were cleared and farmed in the Northwest during 1921. But the stump enemy must be beaten still further. Most farmers are planning to increase their incomes in 1922 by clearing even more land than last year.



STUMPING POWDERS

(Du Pont and Repauno Brands)

Make your plans now. Take an inventory of your land. Resolve to put just as many idle, waste acres to work for you in 1922 as you can clear.

More land has been cleared in the Northwest with Du Pont Stumping Powders than by any other explosive merely because their uniformity makes them the most reliable and their strength makes them the cheapest.

You can buy Du Pont Stumping Powders from your hardware dealer or general store. For complete instructions for using explosives for land-clearing, drainage and tree-planting, write for free copy of Development of Logged-off Lands.

E. I. Du Pont de Nemours & Co., Inc.

SPOKANE—SEATTLE—PORTLAND

Nursery Stock Quarantine

A QUARANTINE has been established against the importation into Washington of nursery stock from the counties of San Benito, Santa Clara, San Mateo, Alameda, San Joaquin, Sacramento, Yolo, Solano, Contra Costa, Napa, San Francisco, Marin and Sonoma in California and Linn, Marion and Polk counties in Oregon. The quarantine was issued because of prevalence of pear thrips which is not prevalent in the state of Washington.

Every shipment of nursery stock or any other host of pear thrips from the counties

and territories mentioned must have all foreign particles thoroughly removed from the roots, and during the period of activity of the pear thrips, namely March, April and May, all parts of nursery stock except roots must be dipped in a solution of miscible oil No. 2 (five gallons), and black leaf 40, (one pint to 200 gallons of water). All shipments of nursery stock from these sections into Washington must be accompanied by an official certificate from a local horticultural inspector or quarantine officer showing that these regulations have been complied with.

Winter Injury

(Continued from page 6)

trees would not be crippled as they are now bound to be when heart-rot fungi enter the unprotected wood. Frozen wood is very susceptible to attack by these wood rotting organisms. Living bark is the best protection against such invasion, but failing that, exposed wood should be coated with a good protective tree paint, such as that made by warming together a mixture of 1/3 creosote and 2/3 coal tar, or a good Bordeaux paste may be used. Both should be frequently renewed until the wound is completely healed over.

Apples, 30-year-old Baldwins, Spitzenbergs, Romes, Ganos, Astrachans, and Yellow Transparents—The Baldwin, Spitz, and in some case the Romes also were girdled above the snow line when examined in February, the bark being discolored all the way through and the sapwood likewise browned. In such cases the trees were recognized as hopeless and by July nothing remained of them but a collection of dead trees. Except for a few green shoots that had "suckered" from below the snow line they presented the same appearance as in February. An occasional tree, more vigorous than its neighbors, or those that had been fertilized, appeared to be in better shape and with careful nursing might pull through, but these trees were few. It was a striking demonstration of hardiness, however, to see Astrachans, Yellow Transparents, and Ganos in full leaf and bearing a good crop, standing out green and vigorous in the midst of the dead trees, sole survivors of a once beautiful orchard.

Filberts, 9-year-old Barcelona and DuChilly—The catkins were killed above the snow line, but were not injured below. Pistillate flowers were uninjured. Occasional cambium injury was observed on the south side and where the trees had been heavily forced this was more severe. The greatest damage, however, resulted from the loss of the next year's crop.

Walnuts, 9-year-old seedling Franquettes and Mayettes—The one-year-old wood was dead also the buds and catkins when examined in February. The bodies were injured through the bark, cambium and sapwood, especially on the south side, but on the north there was, in many cases, a strip of good cambium that offered some hope of saving the trees, although as cripples. In July we found occasional shoots from adventitious buds below the one-year-old wood and usually many from below the snow line.

IT MIGHT be of interest to go a little farther with these special reports on conditions in nut orchards. For instance, the influence of elevation and good air drainage was shown in the freedom from injury of the extensive plantation known as the Eola Tracts near Amity, Ore. One or two trees only on the entire planting of over 1300 acres, showed any injury at all, very slight discoloration in the outer

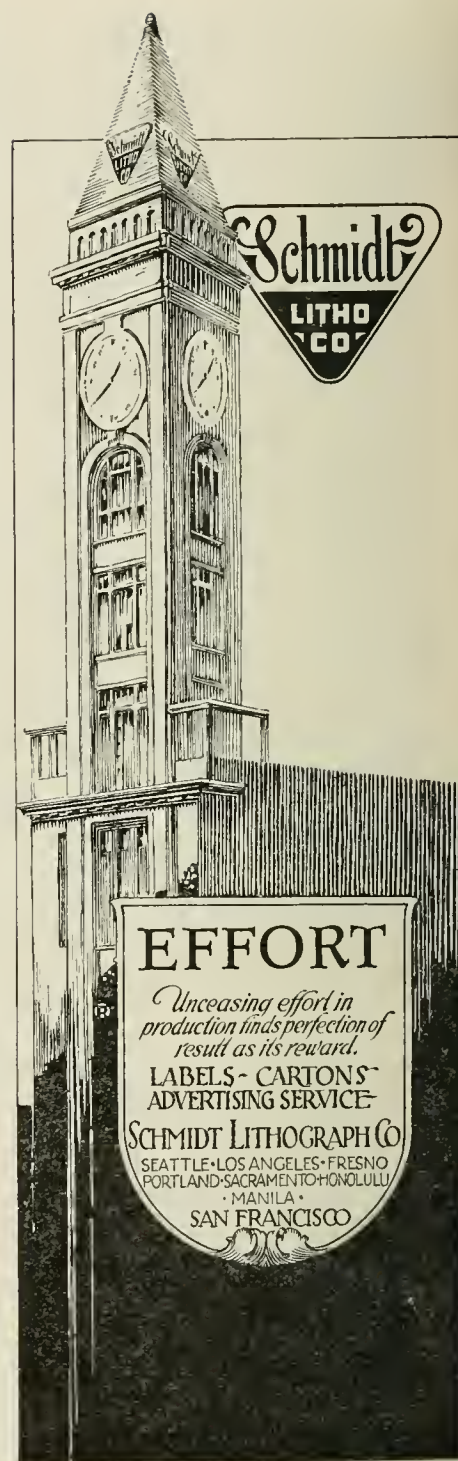
bark. These trees were in a little pocket shut off by some woods. The planting is located at an elevation of 700-800 feet above the main valley floor, where severe loss occurred. The land is very rolling and this provides good air and soil drainage. Due to its elevation it escaped the severe freezing temperature since the minimum reached only six degrees above zero. Again, in the Liberty District, south of Salem, there is a walnut orchard extending from a small flat on poorly drained land over a hill. The trees on the flat were observed to be badly damaged in February and I suspect some of them have since died, but on top of the hill no damage could be found. These observations doubtless could be multiplied many times if we could collect the experiences of all the growers.

What is the lesson—Choose a safe location for your plantation, do not disregard such fundamental consideration when establishing a business that should last a lifetime or more, but which can be wiped out in a single night. A perfect climate exists only in the prospectus of the real estate man; don't gamble with the weather.

Besides choosing a good location, what more can we do for protection? We can influence the degree of dormancy with which our trees enter winter by the manner of cultivation and the system of cover cropping employed. Take as an instance in point the orchards of Charles Trunk, at Dundee. His plantation is on deep clay loam soil, very retentative of moisture and it extends from low bottom land over the lower slopes of the hills. He recognizes that the different sections require different treatment in the way of cultivation, and that he succeeds in inducing proper dormancy was indicated by the condition of his trees and their comparatively light damage when I visited the orchards in February. He has good drainage conditions except on the low bottom land, but here he discontinues cultivation in June to allow the trees to harden up for winter. On higher land he cultivates until August, depending upon the soil. He grows a cover crop of clover between the trees and this also aids in better ripening of the wood as well as furnishing fertility. Such conditions call for good judgment in balancing moisture conservation for crop production and timely checking of growth in preparation for winter. The wood of his trees appeared uninjured in February, but occasional bark injury was noted as well as killing of buds and catkins, the critical temperature for which was passed with cold registered at ten degrees below at his place.

The question is frequently asked as to the possibility of reducing loss from winter killing by topworking tender sorts to hardier varieties. For obvious reasons complete success by this plan can only come if the operation is carried out below the usual snow line.

When injury has already occurred above the snow line and the trees are likely to die



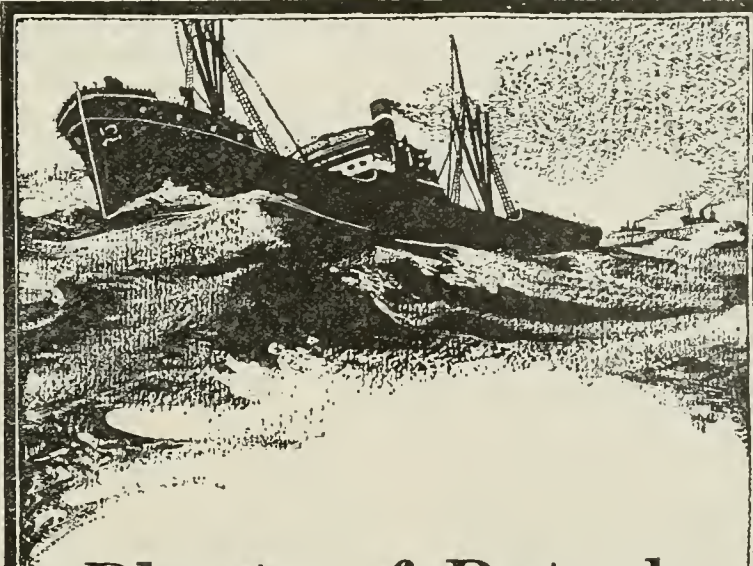
as a result, which was the case in so many instances two years ago, resort may be had to stump grafting, as has been successfully demonstrated by W. W. Reburn in his ten-year-old walnut orchard at McMinnville, and by Mr. Cox, also at McMinnville, in the case of his old apple orchard. If, however, you are going to stump-graft, the quicker you cut away the dead top the better chance you will have for success of the operation. Mr. Cox's experience will bear out this statement, for where he delayed his grafting operations until the trees came into leaf he had rather a poor success in getting his cions to take, while in cases where the work was done early he had complete success.

THE importance of vitality and vigor in a tree in withstanding frost damage was strikingly illustrated in several orchards. In February we were inclined to think that the old neglected trees, those that had not been making a vigorous growth, were injured the least, but this good showing did not extend through until July. The weak trees may have been more completely dormant at the time of the freeze and may have been injured less, but if so they did not have the ability to recover while the more vigorous trees did. In February we visited the orchard of Frank Hrubetz, south of Salem and found striking differences in the amount of injury in different parts of the orchard. The orchard consists of 20 to 25-year-old Italian prunes and a number of old pear and other trees. Part of it had never been fertilized, and this section showed much injury in the tops of the trees, branches frozen through and dead in the crotches, especially at the base of the old pendant fruit spurs on the prunes. Another part was treated with two pounds of nitrate of soda per tree in the spring of 1918. The injury was markedly less in this section.

Still another section had been treated for two years with nitrate of soda and here there was no injury at all in the tops. The prune orchard of L. T. Reynolds, north of Salem showed the same thing, much less injury on trees that had received nitrogenous fertilizer, while many trees that had not been fertilized failed to survive. We carried on some spraying experiments in the latter orchard in 1919 and during the course of this work a number of the trees lost a considerable amount of their foliage as a result of spray injury. The winter injury on these trees located in the unfertilized section of the orchard was most severe and many of them have died. In the fertilized section these trees showed damage, but survived.

This freeze demonstrated some valuable lessons, one of the chief of which is the remarkable recuperative power of frost injured trees, and in this connection we probably shall have to concede the honors to the Italian prune. But among all fruits and nuts we saw demonstrated their comparative hardiness, and so we may therefore choose for our future plantings such varieties as are most likely to withstand the next "test winter."

I want strongly to urge that growers of the Northwest coast country study each other's experiences growing out of the freeze, so that they will be better prepared for the next test winter. We use Nature ill if we do not use her to best advantage. So for further plantings let us choose the site intelligently with a view of all possibilities; let us grow varieties of proved hardiness as well as of proved worth otherwise; and then let us care for the trees, not as a crop of potatoes to be dug in the fall, but as a trust that we may leave when we are gone.



Plenty of Potash

*After all the years of
Potash Hunger
the opportunity has come to buy
Potash at very low prices*

IN order to take advantage of these low prices no time should be lost in telling your dealer what you will require so that there will be plenty of time to import the Potash.

The right kind and amount of fertilizer is a great help in reducing the cost of crop production.

A fertilizer high in Potash, 4 to 10 per cent, improves both the quantity and quality of all crops.

Great quantities of Potash have been removed from the soil in the past six years. Now is the time to restore it at small cost.

SOIL & CROP SERVICE, POTASH SYNDICATE
H. A. HUSTON, Manager
42 Broadway New York

POTASH PAYS

Rodent Warning

By LUKE POWELL
Yakima, Washington

UNLESS the fruit grower who has had alfalfa in his orchard takes some drastic steps to control the mice the loss from girdling will be severe, especially if we have a hard winter.

There is no question but that alfalfa is a fine soil builder for the orchard, but it is also an excellent breeding place for mice. Never but once before have I seen the mice as bad as they are in some of the orchards in the Valley this fall. I have seen orchards where .60 per cent of the trees were girdled during the winter. This will be duplicated in some orchards in the Yakima Valley and elsewhere if the owners do not wake up to the situation before it is too late.

The owner of a good orchard cannot take too many precautions. Disc the alfalfa in this fall. Clean away all trash for two feet from around the trees. Drop poison grain in the burrows or holes of the mice and under V shaped troughs, turned upside down, and in or under other things where the mice can get to it, but birds and fowls cannot. Later if there is a heavy snow and you do not feel any too safe clean the snow away from the base of the trees. However, do not fail to destroy as many mice as possible before real cold weather arrives.

I have known the mice, when they were hungry and other food hard to get, to girdle the roots of large trees from three to four feet from the trunk. Trees are never safe as long as there are mice in the orchard. The saving of one tree will pay for a number of pounds of poison and hours of labor.

The owls destroy a great many mice. Do not kill them.

Elemental Treatise on Pruning the Apple

(Continued from page 13)

Perhaps the most efficient method is to twist together lateral shoots from opposite scaffold branches allowing them to grow together, forming a support. This is best done during the third to fifth years of the tree's growth. It will increase with the tree in size and strength, giving a strong permanent support.

FORMING the Head—In forming the head keep in mind a mental picture of the ideal tree. The four or five scaffold branches should issue in a whorl evenly distributed between the heights of fifteen and thirty-five inches on the stem, extending outward obliquely and turning upward gradually as the branches become smaller and weaker, giving strength to the limbs and making a wide expansive wine-glass form with a rather open center admitting sunlight and air and affording the greatest possible leaf and fruiting surface

as low down as possible, yet no branch drooping to interfere with cultivation.

We will now consider the steps taken to secure this ideal form.

Pruning at Planting—This first pruning consists in cutting back the top and pruning the roots. The roots are usually cut back quite severely in removing them from the nursery row, and should be pruned as lightly as possible at planting time, removing only broken, badly bruised, diseased, or dried out roots, and cutting the healthy ones back to live tissue. This allows the wound to granulate, heal, and throw out feeders. A knife or hand pruning shears is used. The knife makes a smoother cut, but the latter is generally preferred on account of greater ease and rapidity.

Head at Thirty-Five Inches—The proper height to head the tree is a question of pop-

ular dispute among horticulturists. Various heights from eighteen to thirty-six inches being advocated.

The idea is to head as low as possible yet allow sufficient room for scaffold branches. The lowest branch should issue at about fifteen inches from the ground to permit proper cultivation beneath. The four main branches should be at least six or seven inches apart on the stem. If closer, when they become large they would appear almost together, crowding badly, at the point of emergence and forming weak crotches. This would bring the upper branch at about thirty-five inches. Some may think this is too high, reasoning that to head lower would bring the fruiting wood lower. Yet as a matter of fact there is practically no difference.

(To be continued)

MYERS SPRAY PUMPS

The inestimable value of spraying has again been demonstrated this year. While some localities report smaller crops of fruits and vegetables than usual, the quality has invariably been far above the average thus balancing the shortage in production.

This indicates that whether the yield be an abundant or small one there is always a ready sale for choice fruits—and choice fruits can no longer be grown without resorting to the protection afforded through spraying.

MYERS SPRAY PUMPS, NOZZLES and ACCESSORIES have long been assisting fruit growers, farmers, gardeners and others in their fight against plant and tree enemies. Economical, practical, reliable and fully proven, with styles to meet all spraying requirements, no matter how large or small your orchard or vineyard, there is a guaranteed Myers Spray Pump that will exactly fit your needs, and the price will be as low or lower than many of the light weight, poorly constructed and cheaply equipped outfits now on the market.

Call on the Myers Dealer in your locality or write us direct when ready to purchase. Send for a copy of our late catalog today—It's free and a postal will bring it to your door.

FOR SPRAYING, PAINTING, WHITEWASHING AND DISINFECTING.

CATALOG FREE ON REQUEST

THE F. E. MYERS & BRO. CO.
135 ORANGE ST. ASHLAND, OHIO.

MANUFACTURERS OF PUMPS FOR EVERY PURPOSE
HAY UNLOADING TOOLS AND DOOR HANGERS

TAKE OFF YOUR HAT TO THE MYERS PUMPS FOR EVERY PURPOSE HAY TOOLS & DOOR HANGERS

Pacific Northwest Distributors **Mitchell** Lewis & Staver Co. Spokane, Wash. Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

Pruning Suggestions

(Continued from page 7)

be avoided. I do mean, however, that in general a fruit spur which bears fruit one year will not bear fruit the next. The reason is obvious if we appreciate the theory of fruit-bud development. The spur which bears fruit expends all its energies and uses all available food supply to develop the fruit. There is no reserve food supply available for fruit-bud development. This spur must then take another year for recuperation and fruit-bud formation. On the other hand the spur from which the fruit has been removed will elaborate in its own leaves a supply of reserve food material and will develop fruit-buds for the next year's crop. This then is one of the prime objects of thinning. To be sure, we thin for size, but after all we may thin for size and not secure annual bearing. That is we may get a crop of fair sized apples and still have alternate bearing.

There is a limit to the amount of fruit that may be developed and still develop fruit-buds. One must gain judgment on this point by actual experience. We are quite apt to lack courage in thinning. I believe we should decide about how many boxes of fruit a tree will develop and then thin for that amount. This means that we may actually need to count the fruits remaining on the tree. Suppose we decide a certain tree should bear ten boxes of apples and that a desirable size of fruit is say 135 to 150 apples to the box. Then thin the trees to 1350 to 1500 apples. If you don't make some such estimate you are pretty sure to leave more fruits than the tree will properly develop. If it produces this crop and fails to bears flowers the next year you have over-estimated the capacity of the tree at least in most varieties. If the fruits develop over-size or the tree matures it fruit well and makes too much growth you have under-estimated the tree's capacity.

Every grower must for his own conditions, work out his own standard. It will not be necessary to make counts in all trees for you will in time develop a good thinning judgment. If this thinning is to be effective it must be done early, at least before the season of fruit-bud development is well advanced. In our standard apples like Wealthy and McIntosh I am quite sure that the annual crops may be secured by proper pruning thinning, but not by pruning alone.

IT IS ALSO well to remember that in some varieties at least there is a choice to be made in the fruits to be left. For instance, a normal cluster of apple flowers is six. In the McIntosh the center or sixth blossom does not develop a good fruit. The stem is short and fleshy and the fruit is angular and of poor shape. This is the flower that too often sets and the fruit develops at the expense of the others which

drop or are crowded off. The next two blossoms below this are the ones that develop into the best fruit.

I want to mention briefly, that there is another stage in the development, which we should watch out for, and that is the stage when the fruit begins to develop out on the tips of the branches, at the expense of those in the center of the tree. Such a growth indicates that the tree requires more pruning, and then we begin what we might call a system of pruning for the heading in of the branches, to encourage more growth in the center of the tree. I don't think much of allowing the tree to develop its fruit away out on the tips of the branches.

Then, one other point, and that is, pruning tools. I don't believe many of us appreciate the convenience of proper pruning tools in orchard pruning, and I think we should put more emphasis on proper tools. I wonder how many orchardists have used a pole pruning saw, which, in my estimation, is one of the most convenient pruning tools about the orchard; we have all used pruning clips, probably, but by a pole pruning saw, we will eliminate one-half of the climbing and one-half of the work on stepladders; a good type of pruning saw is one with a curved blade on the end of the pole; they cut both ways, but particularly when pulling, which is the safest way to cut, when pruning.

Treat Your Soil with Toro Brand Agricultural Sulphur



Improves alkali soil, transforms latent potash and phosphates into available plant foods.

Prevents wire worms, eel-worms or nematodes, smutty grain, ants and potato scab. 220 lbs. per acre has increased crops up to 500%.

For dry dusting, use "ANCHOR" Brand Velvet Flowers of Sulphur.

For Lime Sulphur Solution, use DIAMOND "S" Brand Refined Flour Sulphur. Sold by leading dealers.

Write for circulars Nos. 6 and 8, price-list and samples. State for what purpose sulphur is to be used.

SAN FRANCISCO SULPHUR CO.
624 California St. San Francisco, Cal.

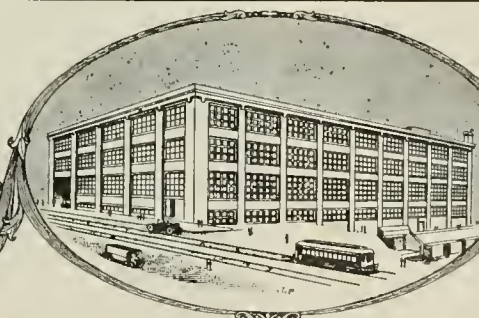
Apples, Pears, Peaches Potatoes, Onions

and all kinds of Fruit and
Produce Bought for Cash..

Address us as to what you
have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.



F.C. Stettler Mfg Co.

Portland - Oregon

Lithographers

Color Printers

Labels

Cartons

Folding Boxes

Cut Outs

Display Cards

Special Advertising

Stiff Boxes Plain and Fancy

Eastern Growers

MID-WEST and eastern orchardists are planning to follow the Pacific Coast practices in growing and marketing their fruits in an attempt to recapture their own home markets now largely held by the far-west trade. They are telling themselves that if they prune to get better size and color in their fruit, spray to keep down insects and diseases, pick the fruit tenderly to keep it free of bruises, and then put it up in attractive box packs which are held in cold storage "with enough moisture to prevent shriveling," they can oust the western product because of the advantage they have in transportation charges.

This does not mean that the coast growers are bound to lose the markets, comments W. S. Brown, chief of horticulture at Oregon Agricultural College Experiment station. Superior climatic conditions make for a certainty of crop much above that of the eastern conditions, and also lend a high color and fine quality that are truly distinctive. The industry is a business in itself here, while in the more eastern districts it is only a side-line that will not get the study and attention it receives here.

Western men have a big advantage in the cost of containers, Professor Brown points out. Nearness to box lumber mills enables the western grower to buy good boxes at 12 and 16 cents, whereas, the eastern growers paid as high as \$1.50 per barrel of three bushels capacity last year.

With a further reduction in freight rates by rail to eastern points, and increasing shipments through the canal to European markets the Pacific Coast growers may expect to find outlets for their surplus high grade fruits.

Profits of Thinning

APPLE thinning tests conducted in the orchard of O. W. Melton in the Fruitvale district, Yakima valley, this season by E. G. Wood, extension horticulturist of the Washington State College, in co-operation with the farm bureau, indicated that the thinning increased the value of the fruit \$3.20 per tree. Increase in the value of the crop at that rate in this particular orchard, where the trees are 100 to the acre, would be \$320 per acre.

In view of the fact that the thinning was said to have been done later than it might have been and in view of comparatively small size of the fruit, the benefit from the thinning is not as pronounced as might be expected and the estimate of its value in the crop, \$320 per acre, is quite conservative, it is stated. Mr. Wood put on 12 thinning demonstrations in Yakima county this year and it is the general belief that the instruction given will bear fruit in more care in thinning and larger size of fruit.

In this particular test the value of the fruit on the thinned trees amounted to \$24 as against a value of \$20.50 for the fruit

on the unthinned tree. The cost of thinning was estimated at 50c per tree. The two trees were the same size, in the same condition and as near alike in set of fruit and general thriftiness as it was possible to select. The unthinned tree had slightly more apples on it than the thinned tree, but both trees packed out about the same number of boxes. The thinned tree, however, had the advantage in size of fruit and in color, making the crop on it worth \$3.20 more than that of the unthinned tree.

Codling Moth Bulletin

BASED upon spraying experiments conducted in several orchards during the seasons of 1915, 1916, 1917, and 1918, on representative apple varieties, the Department of Agriculture has issued Department Bulletin 959, a professional paper entitled, "Experiments and Suggestions for the Control of the Codling Moth in the Grand Valley of Colorado." by E. H. Siegler and H. K. Plank.

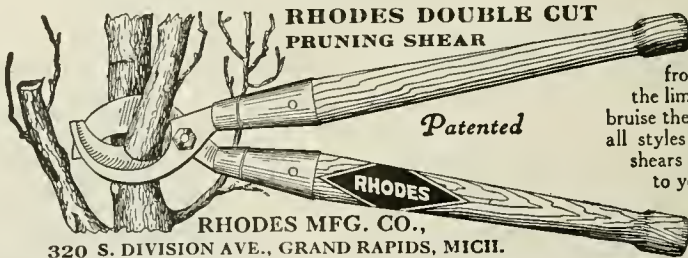
Spraying schedules for three applications are also given. Best results, it was found, were obtained from arsenate of lead at the rate of 1 pound of the powder or 2 pounds of the paste to 50 gallons of water. The matter of spraying equipment, together with supplemental control measures, is also discussed in the bulletin.

Enemies of Grapes

PERHAPS no horticultural crop so well illustrates the serious loss which may result from native species of insects and fungi attacking cultivated varieties of their natural wild food plants as does the grape. In a new Farmers' Bulletin of the United States Department of Agriculture, No. 1220, Insect and Fungous Enemies of the Grape, 64 out of 75 pages are devoted to description, history, and control measures for those of principal importance.

Several of these species in certain sections rank as first-class pests, such as the grape rootworm, grape-berry moth, grape curculio, grape leaf-hopper, grape leaf-folder, grapevine flea-beetle, rose-chaffer, grape phylloxera, and the like. The bulletin, which may be had upon application, also deals with species which ordinarily are not important except during occasional seasons, or more or less locally, but are nevertheless the subject of many inquiries to the department every year.

Insect and fungous enemies of grapes are not less amenable to treatment than pests of other fruit crops, and the bulletin outlines methods of prevention and control which have been demonstrated by the investigators of the department to be successful.



**RHODES DOUBLE CUT
PRUNING SHEAR**

Patented

**RHODES MFG. CO.,
320 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.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

WASHINGTON

FROM White Salmon more than 200 cars of apples had been loaded out by the middle of November, and warehouses were reported as still packed to capacity.

AMONG heavy yields of apples in the Yakima Valley was that of J. F. Douglas, near Wapato, who obtained 12,000 boxes from 14½ acres, or an average of 870 boxes per acre.

CARL R. PIERSON, 28 years old, is credited with having made the highest record as a box ligger in the Yakima district this season. His record was the lidding of 2,260 boxes of pears in one day.

IN THE Prosser district the better returns on grapes were these: Two acres owned by O. S. Larson, gross return, \$2,400; four acres Concord owned by Mrs. George Finn, gross return, \$4,000.

APPROXIMATELY 600 cars of apples were produced this season in Walla Walla county. More than half were shipped East as fast as packed, but a big surplus piled up at the time the rail strike threatened.

SIX carloads of "gift apples" were shipped some little time ago from Wenatchee to Chicago in solid cars. From Chicago the shipment is being distributed to all parts of the country by express and parcel post, under special labels affixed to the boxes.

A TOTAL of 150,000 gallons of cider and 200,000 gallons of vinegar will be produced by the Inland Products Company, at Spokane, according to Manager Charles Theis. Reports show seven cider mills at work in Spokane, with promise of record production because of an unusual quantity of windfalls following the early windstorm.

WHAT doubtless is to stand as the record day's shipment of apples from the Wenatchee district was made on October 30, when 300 refrigerator cars were dispatched.

FRED WREN, orchardist of the Lake Chelan district, was given credit for having displayed the biggest Delicious and Rome Beauty apples seen in Spokane this season. Twenty-eight of the Rome Beauties filled a box, as they averaged 1½ pounds apiece and measured 16 inches in circumference. The Delicious averaged 1¼ pounds apiece.

ACCORDING to report from Springdale, 100 cars of apples were loaded there for shipment to England.

THE Harmony ranch, on Crescent Bar, near Trinidad, with 54 acres planted to apples and pears, was recently purchased by R. A. Tedford & Co. The apple crop this season was 15,000 boxes, the trees being eight years old.

ACCORDING to officials of the Skookum Packers' Association, the Peshastin Fruit Growers' Association recently packed out 10,808 boxes of apples in one day. They believe this set a new record for a day's work in any packing house of the Northwest. This output of more than 14 cars was sent over nine Cutler grading machines, one of which handled 1,341 boxes.

AT VANCOUVER recently Chat Knight sacrificed a 40-year-old cherry tree of the Bedrock Democrat variety which stood in the parking before his home. He cut down and destroyed the tree principally because it dropped its fruit too profusely on the sidewalks. This cherry has the unfortunate quality of deeply staining anything with which it comes in contact, and hence is not readily marketable.

THE Yakima Fruit Growers' Association at Sunnyside, Wash., report having packed out 2207 boxes of Rome Beauties in one day. They used one of the Cutler special warehouse model graders. This is something over three carloads of fruit made ready for market in a day. Rather different from the hand sorting and sizing of the old days.

A Christmas Special
\$200 Phonograph for
\$95

To The Readers of Better Fruit



Here is the reason we can make this extremely low price. We have taken over the complete stock of Phonographs from one of the largest wholesale houses in the northwest at a tremendous discount, they having discontinued this department, and we are passing the saving on to the readers of Better Fruit.

A sweet toned Phonograph in a beautiful cabinet, (Mahogany or Golden Oak). One of the Standard makes and you can buy it at wholesale price while they last. 10 days Free Trial. Compare it with any machine selling at \$200, and if you do not find it their equal, return it and we will refund your money.

It has all the latest attachments and plays all records. Every machine GUARANTEED.

You will have to order at once to get in on this special offer as our stock is limited. Write today for full information.

This Is Your Opportunity, Grasp It!

NORTHWESTERN
LIQUIDATING CO.

209 Dekum Building

Portland, Oregon

Golden Winesap
A Wonderful Apple
It has the juicy tartness of the Jonathan, the meatiness of the old Winesap, the beauty of the Winter Banana, the deep gold color of the Grimes and the keeping qualities of the good old Ben Davis. Strong grower, healthy and vigorous. Originated in Utah and should be hardy everywhere. Bears young and very profusely.

True Delicious Apple
This is the ideal form apple. Large fruit, beautiful dark red, quality unsurpassed. Flavor sweet, slightly touched with acid, comes out of storage in perfect condition.

Campbell's Early Grape
A new variety, vigorous growth, very hardy, very early and an abundant bearer. Good shipper; keeps for weeks after ripening.

Perfection Currant
In our entire experience this is the best bearer, the largest, sweetest and easiest to pick. Rich, mild flavor, less acid and few seeds.

Low Prices Direct to You
All kinds of Fruit Trees, Plants and Shrubs, Vegetable, Flower and Field Seeds, etc., of the best quality, at very low prices. Get our Big Free Illustrated Catalog and prices before you buy.

SONDEREGGER NURSERIES & SEED HOUSE
80 Court Street Beatrice, Nebraska

Seeds and Trees That Grow

APPLE shipments from Selah will be heavier than anticipated, the estimate having been raised from 1,000 to 1,200 cars. In mid-November warehouses were jammed with packed and loose fruit, and at one time one of the packing houses was obliged to suspend accepting apples temporarily.

E. S. BARNES was elected president and D. A. Chellien was chosen secretary of the Jefferson County Berry Growers' Association, at the annual meeting held in Port Townsend. J. M. Kincaide was elected to fill a vacancy on the board of directors.

FOR the Wapato district the claim of producing more than 1,000 boxes of apples per acre is put forth by Harry Jones. On 11.5 acres, carrying 800 trees, Mr. Jones harvested 12,000 boxes, principally Winesaps. The trees are 11 and 14 years old. Mr. Jones attributes his record to successful fertilization, which consisted in leaving alfalfa uncut in the orchard, supplemented last year with nitrate placed about the trees. He expects to use five pounds of nitrate per tree for next season.

SUCCESS of a "fruit handling" machine invented and built by the Spokane Valley Growers' Union, and the only one of its kind in the world, is reported by Edward Peirce, manager of the growers' union. The machine has been in operation since the shipping season opened and is reported by Mr. Peirce to have increased the handling of fruit by about 50 per cent. At the time Mr. Peirce gave the report the union had shipped 110 carloads of fruit as compared with 50 carloads at the corresponding time last year. The increase was attributed chiefly to the new machine.

OREGON

FOR the prunes produced on his 12-acre orchard at Scio this season, Mat Doubek received \$1,700. This is to be compared, however, with a return of \$4,000 for the 1918 crop.

IT IS expected that the Hood River Canning company will pack 500 tons of lower grade apples in gallon cans this year. The plant has been working on Spitzenbergs and Newtowns principally to date. It employs about 35 persons and will be in operation until March 1.

AN APPLE show was held by the Milton-Freewater district November 11, at the new Lamb packing plant at Milton. This district is reported to have had an apple crop fully equal to the record crop of 1919. Prune shipments amounted to 600 cars.

NEARLY 80 tons of prunes were processed from the 40-acre orchard of C. R. Widmer of North Benton. The prunes were processed and graded at the Dallas plant of the Oregon Growers' Co-operative association and 10 tons graded as 20-30s.

A PRUNING school will be held in the Hood River valley December 5 to 8, inclusive. One school will be held December 5 and 6, at Parkdale, and the remaining two days will be spent at Hood River. The work will be in charge of Clayton L. Long, extension specialist of Oregon Agricultural College.

THE acreage of cranberries along Coos Bay is steadily increasing as the crop is proving a profitable one. On a tract on North slough production this year was reported as between 100 and 150 bushels per acre.

THE largest trainload of fruit ever shipped from the southern Oregon district was composed of 51 cars, dispatched from Ashland over the Southern Pacific on November 1. The shipment, which went south was composed of fruit from the Willamette, Umpqua and Rogue River valleys.

GROWERS at Freewater will receive \$2,000,000 for this year's apple crop, according to a recent estimate. Cost of production was placed at 50 cents a box and net return at \$1 a box. The community's prune crop was more than 250 cars. The price for prunes averaged about \$40 a ton, with \$52.50 as the top record.

THE mild weather which prevailed over the state until the third week of November developed second crops of berries in many sections. Second crop raspberries were grown in numerous sections. Strawberries were in the home markets at Medford, Marshfield and other towns at late as November 10 and 12.

SO DIFFICULT was the matter of judging between exhibits at the highly successful Rogue River Valley Apple exposition at Medford that the judges resorted to microscopes in looking for blemishes. In the three-box entries contest the judges thus examined every apple in the competing exhibits of Upton Brothers of Central Point and the Bear Creek orchard of Medford. The award was finally given to Upton Brothers. They also won first in one-box entries of Jonathans, Newtons and Spitzenbergs.

IDAHO

THREE weeks ago it was reported that there were 100 carloads of apples in storage in the modern new plant at Eagle Heights, near Nampa. It was estimated that it would take the packers three months to handle these apples.

AT EMMETT the Hartley prune orchard of 8½ acres, now owned by W. Stone, yielded 164 tons of green prunes, or almost 20 tons per acre. The prunes were sold in special cases at 70 cents a case, which brought a return just short of \$50 a ton.

THE McBirney Fruit Company, with large prune orchards at Meridian and Beatty, produced and shipped approximately 200 cars of prunes. The shipment of about 100 cars from Beatty was "suitcase" packed.

M. C. HINSHAW has a 15-acre apple orchard near Greenleaf, in Canyon county, from which he is said to have netted \$1,000 an acre in the past three years. This year he sold his crop at \$51 per ton. His gross return was \$1,400 an acre, and \$400 of this was clear profit.

ON THE upper slopes of the Central Cove district, California grapes are grown with entire success. Jacob Mussell, who has a vineyard there, had a fine grape exhibit at the Idaho state fair, including Flaming Tokays, Thompson's seedless, Malagas, Muscats and Blue Damascus varieties.

SERVICE
IS OUR FIRST N-AIM

THE
SIMPSON & DOELLER
CO.
1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES
AND PRICES

WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.

**"The Wise Men
of Appletree
Town"**

—are the men who choose their banking connection with the same discrimination they use in pruning. The First National Bank, because of its size and comprehensiveness of its departments, is particularly equipped to offer the horticulturist the most in banking service.

Its facilities and the personal interest of its officers are at your disposal.

The
First National Bank
OF PORTLAND, OREGON
The first national bank west of the
Rocky Mountains

Musical Merchandise	WE SAVE YOU MONEY!	SHEET MUSIC
—	W. Martius Music House, Inc.	—
Write Us	1009 First Avenue, Seattle, Washington Everything Known in Music	Write Us

ROBERT HYSLOP has a peach orchard of four acres in the Deer Flat district, south of Nampa, which netted him big returns, both this year and last. The crop of 1920, sold on the trees at 4 cents a pound, returned him \$1,786. This year's crop, which was about 50 per cent greater, was sold for 5 cents a pound. The trees are but six years old.

IN IDAHO the prune growers and shippers this season quite extensively used what they call the "suit case" pack for their fruit. This means use of nothing other than the ordinary peach or tomato box which holds about 19 pounds net. An advantage is said to be much greater speed in handling the fruit. The price per "suit-case" this year ranged around 60 and 70 cents.

TRACT of the famous Stephens apple orchards at Nampa, planted 96 trees to the acre in 1908, this season averaged 13 1/5 boxes per tree, or 1,267 boxes per acre. Yield per tree ranged from 10 to 19 boxes. E. F. Stephens, widely-known orchardist and principal owner, attributes this record to frequent cultivation in the earlier stages and the supplying of lots of plant food, particularly alfalfa, as the orchards get older.

CALIFORNIA

UNDER sponsorship of the California Pear Growers' Association the First Annual Pear Industry convention was held in Berkeley, November 21 and 22. Everybody connected with the industry, including buyers, canners, shippers, driers and transportation agents, was invited. In calling the convention President Frank T. Swett of the association said the industry annually brings \$12,000,000 to the state.

A BIG fight for lower freight rates for 1922 on deciduous fruits is being outlined by the California Fruit Growers' and Shippers' Protective league, recently organized at San Francisco. Frank T. Swett has been made manager of the organization, which has opened offices in San Francisco.

RASPBERRIES from the Shady Oaks farm in Saratoga were a part of numerous Thanksgiving menus in Chicago. The berries, reported to have been of exceptional quality, were assembled at San Jose and sent forward from the model pre-cooling plant there in time to go on the Chicago market just before Thanksgiving time. There was a carload of them.

WHAT is considered a record price of the year for peaches was recently reported by J. L. Nagle, general manager of the California Fruit Exchange. A shipment of Levi clings from Newcastle sold at a New York auction on November 1, for \$5.25 a box. The net price was calculated as \$4.36. The boxes contained an average of 45 peaches, or 18 pounds of fruit.

IRRIGATION and methods and practice of graftage are given prominence in the deciduous fruits short course being held at the University of California farm, at Davis. The course opened November 28 and is to continue until December 12.

A LONG-TERM pruning test on a large scale has been mapped out by the University Extension Service for a plot of peaches and apricots a mile long, on the California Packing Company property near Tuttle. The trees were planted in 1919.

IN OCTOBER, the Watsonville district shipped 800 cars of apples, 241 to eastern points and 539 to California points. In the same month last year the district shipped 680 cars.

CALIFORNIA authorities are insistent on enforcing the apple standardization law to insure a more perfect pack. A Watsonville grower was recently fined \$100 for violation of the law.

IT IS reported that the 5-cent package of raisins put out over the country by the Associated Raisin Company has proven so popular the company can not get cartons fast enough to take care of the demand. Now the California Prune and Apricot Growers, Inc., have followed out the same idea by putting out a 5-cent carton of prunes.

REPORTS from San Francisco on the shipment of Concord grapes from Washington were to the effect that they did not sell well, drawing an offer of 5 cents per pound. The shipment carried poorly, it was said.

INVESTIGATIONS by the California College of Agriculture have disclosed that peaches are the most popular deciduous fruit of the state. There are 9,000,000 bearing trees in the state that produce an annual crop valued at more than \$30,000,000.

CHARLES W. PUGSLEY, for many years professor of animal husbandry at the University of Nebraska and editor of a farm publication there, has been named as Assistant Secretary of Agriculture by Secretary Henry C. Wallace of the Department of Agriculture.

A MARKET for the peels, cores and other apple waste in the Northwest has been opened up by the establishment of a factory for the manufacture of powdered pectin at Topeka, Kan. The discovery is said to revolutionize the jelly making industry. The discoverer is Albert Leo, a chemist who formerly operated a by-products plant at Moscow, Idaho.

Most of the apples raised in New Jersey this year were sold to mincemeat factories at \$100 a ton, according to A. Freeman Mason, formerly of Hood River, but now in charge of the New Jersey Experiment Station. Many orchardists merely loaded their apples loose in box-cars, taking them direct from the trees without regard to possible grading, and shipped them to the mincemeat makers.

A freak apple that attracted considerable attention was grown this year in the orchard of George Gallaway, east side fruit grower at Hood River. The apple grew on a Spitzenberg tree, but had four equal segments, quite distinctly representing Spitzenberg, Arkansas Black, Gravenstein and Delicious varieties. Cross pollenization was the cause of this freak of nature.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
Salesmen everywhere. More wanted.

RELIABLE NURSERY PRODUCTS

Large assortment of the best varieties in Fruit and Nut Trees, Small Fruits, Shade and Ornamental Trees, Shrubbery, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department, Planting plans furnished for residence grounds, large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Ore.
Opportunities for More Salesmen

Prepared Casein Spreader



Kayso is easy to mix because it requires no cooking. Just sift it slowly into the spray tank while the agitator is running. Kayso does not cause burning or toxicity. It makes the spray cover foliage and fruit evenly - without injury.

CALIFORNIA CENTRAL CREAMERIES
425 BATTERY STREET SAN FRANCISCO 740 TERMINAL STREET LOS ANGELES

Marketing News of Interest

WHILE shipments of apples over the United States at large have decreased by about one-half, as compared with those of a month ago, they are keeping up well in the Pacific Northwest. A check made a week ago showed that Idaho was sending out an average of about 25 cars a day; Oregon around 85 cars a day, and Washington about 175 cars a day.

Indicative of how heavy have been early shipments from the "boxed apple" states was the government's report compiled to November 1. By that date shipments of boxed apples aggregated 28,593 carloads, as compared with only 15,702 carloads by the same date in 1920.

ACCORDING to late figures compiled in the Spokane office of the bureau of crop estimates, the apple crop of the state of Washington was increased by about 3,000,000 bushels, to 28,325,000 bushels. Early estimates had placed the

crop at 25,474,000 bushels. The 1920 crop was 17,000,000 bushels. The state's pear crop is placed at 1,760,000 bushels.

Latest estimates for Oregon place the apple crop at 3,900,000 bushels. Idaho this year had an estimated production of 3,132,000 bushels. This breaks all previous records for the Gem state.

DURING recent days slow demand and dull market for Northwestern boxed apples have been reported from many of the big eastern cities. Where apples have moved, however, it has been at fairly good prices.

CLOSING of first apple pools is now being effected in many districts. One of the first to report was the Hanford local of the Spokane Fruit Growers' Company. Prices for the Hanford pool Jonathans ranged from \$1.35 for the smaller fancies to \$2.25 for the larger extra fancies. On Delicious, for the same grades, there was a range from \$2.73 to \$3.48.

FINAL payments on cherries were made early in November by the Wasco branch of the Oregon association at The Dalles. Net average prices

to growers were announced as follows: Bings, 8.52 cents, Lamberts, 9.74 cents; Royal Anns, 6.65 cents; Black Republicans, 5.63 cents; Oregon Blacks, 9.72 cents.

THE pool of 112,000 pounds of this year's raspberry crop handled by the Eugene Fruit Growers' Association was closed two weeks ago, Manager J. O. Holt announced. The price received for red raspberries was 8½ cents and for blackcaps, 10½ cents.

CANADA'S apple crop is estimated at 3,377,200 barrels in official report of the fruit commissioner. His estimate of production by provinces, expressed in barrels, is this: Nova Scotia, 1,300,000; British Columbia, 1,009,000; Ontario, 960,000; Quebec, 35,300; New Brunswick, 33,000.

IN THE 12 months ending October 31, California shipped 48,350 cars of oranges and grapefruit and 11,797 cars of lemons, 72½ per cent of which, aggregating 43,592 cars, were handled by the California Fruit Growers' Exchange. The average operating cost of the exchange's marketing service was 7.03 cents per box.

BETTER FRUIT'S FIRST BARGAIN DAY OFFER

(Good Until December 25, 1921)

Two Years for the Price of One!

This is YOUR Opportunity:

IF you are NOW a subscriber, to get Two Full Years ahead from the date your present subscription expires for \$1.00.

IF you are NOT a subscriber at present to receive BETTER FRUIT *two full years for \$1.00.*

IF you are NOW a subscriber and want to give some friend a Christmas present of BETTER FRUIT, send \$1.00 and we will extend your subscription one year, also send your friend BETTER FRUIT for one year, thus giving two subscriptions for the regular price of one, or we will send BETTER FRUIT to your friend for two full years.

In other words, you may have as many Full Years' subscriptions as you want at 50 cents each, either all for yourself, or some for your friends.

Whereas this year you fruit men will make some money, we realize that you were all hard hit last year, and so to help just a little we are making you this reduced price. The price of \$1.00 applies to subscriptions within the United States; foreign subscriptions may be figured at one-half the foreign price, or \$2.00 for two years.

We need your support, and perhaps we can help you through the coming year. We are working for the very things which will help you most in the fruit game, but in order to put them through we must have subscribers. Use the coupons below NOW while you think of it, and save half the cost of your fruit paper.

This coupon for your own One or Two Years' Renewal.

Name _____
 Place _____
 State _____ No. of Years _____
 R. F. D. _____ Box _____ **A**

This coupon for your friends' One or Two Years' Subscription

Name _____
 Place _____
 State _____ No. of Years _____
 R. F. D. _____ Box _____ **B**

With the Poultry

PROTEIN FOODS NECESSARY

ONE thing that accounts often for a falling off in egg production during winter months is a deficiency of animal feeds, or feeds rich in protein. Poultry growers must guard against such deficiency and can usually do so without great trouble. On most farms it is easily possible to supply the protein needs of the flock through skim milk or buttermilk. The voracious way in which hens eat these dairy products is excellent indication of their value to the birds. Meat scrap is another protein food that is, of course, standard in poultry rations. The poultry grower who expects to gather high-priced eggs in quantity will see to it that his flock gets this food element in plentiful supply.

Clover and alfalfa leaves provide a most excellent combination of protein feed and green succulence. On farms where hay is handled it is often possible to sweep up enough of these leaves to supply a flock of good size. See that they are gathered from the barn floor or from around the haystacks. A good way to prepare the leaves is to pour boiling water over them, then cover the container and let them steam for a time, when they will be ready to feed either alone or in a mash.

DUST BATH IMPORTANT

A DUST bath is an important aid to the hens in keeping them free from lice and helps forestall the spread of mites in the chicken house. Usually there is a place about the yard or hen-house where the flock may dust itself at will. If there is not one should be provided that is dry and accessible at all times. All that is needed is to provide a box about two feet square containing ordinary road dust or fine dry dirt. The box should be placed inside the house, far enough from any openings so rain may not drive in upon its contents.

IT IS quite essential to induce exercise on the part of laying hens. The best way of doing this is to feed all grain in dry clean straw litter, six to eight inches deep. The common straws, in order of their desirability are: wheat, oats, barley, rye, buckwheat. Shredded or finely cut cornstalks, leaves or shavings may be substituted where straw is not available.

Every flock, to the careful observer will include individual birds that are outstanding in their appearance, that possess the desirable type for the breed as well as the characteristic color of plumage. These more likely appearing birds are caught and carefully examined in detail for color, defects and desirable points. In this way the most perfect fowls are chosen to be segregated and conditioned for exhibition.

SUNNY windows on the south side of the hen-house are almost a necessity to the health and comfort of a properly raised poultry flock.

AS an egg producer and liver regulator sour milk or buttermilk is one of the best foods for poultry.

WITH a clean and healthy poultry house, a good litter of straw may be scattered over the floor and become one of the best of scratching pens.

AS a green food for hens one of the best is cabbage. Being succulent and containing a larger amount of ash and protein than most of the vegetables fed poultry, it is not only excellent for this purpose, but is one of the easiest to obtain. To obtain the best results from cabbage fed to poultry it should be hung up at such a height so that the poultry can just pick them clean to the stump.

A FINE feed on the farm where oats is being grown and easily obtainable is oats tied in bundles and stored in a house where it cannot be cleaned of its heads. Tied in bundles and thrown into scratching sheds it makes an ideal scratching litter in which to throw cracked corn and seeds. Fed in this way it makes a fine feed to compel the exercise necessary to egg production.

Our Inquiry Department

WILL you please tell me what time of year is best for whitewashing trees.—J. M., Oregon.

Trees may be whitewashed either in the fall or spring, but it has been determined that fall whitewashing does the most good. The winter killing of trees that have put forth a late growth, particularly where there may have been too much late irrigation, is appreciably warded off by fall whitewashing. It is well even to give the trees another coat if much of the whitewash is washed off by winter rains.

I HAVE recently rented a place in the Willamette Valley on which there is a small vineyard. Will you please tell when is the proper time to prune grape vines.—A. E. R., Oregon.

You should prune the grapes during the dormant period, the months of December and January being perhaps the best in this section. If you have varieties needing winter protection the pruning should be done at once, but it is hardly probable that your grapes need protection here.

TREES INJURED BY RABBITS

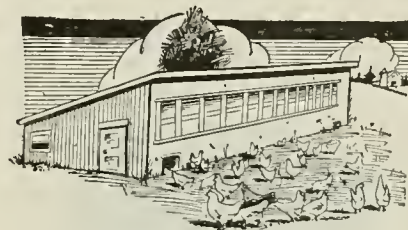
Is there anything that I can put on trees that have been injured by rabbits to heal the wounds?—F. H. T., Idaho.

If the wounds are not too extensive, grafting wax applied to them shortly after they are made will prove effective. Another treatment that has saved trees that were injured by rabbits but were not girdled and had not become too dry was to place against the tree, a mound of earth which was kept irrigated until the surface granulated and new bark was formed. If the tree has been completely girdled and the wound allowed to dry, the only way of saving it is to use the bridge graft. This consists of putting scions taken from healthy trees underneath the bark above and below the wound. These maintain the flow of sap until new bark can be formed.

BUNCHES ON PEACH TREES

I have a number of young peach trees that are developing bunches near the roots that look like crown gall. What can I do with them?—D. C., Oregon.

If these bunches are small the diseased growth can be cut away leaving the healthy wood smooth. The wound made by the cutting process should be painted over with Bordeaux paste.



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Some Reliable Northwest Nurserymen

Blight-Proof SURPRISE PEAR ON JAPAN PEAR ROOT

Tests made in every conceivable way in the experimental blocks along side of and at the same time with all leading varieties of pears have proven the impossibility of spreading pear blight more than a trifling distance beyond the point of inoculation.

Plant the blight-proof Surprise and insure against loss. The second year top-work to Bartlett, Bosc, or any desired variety and you have the most blight resistant trunk and frame-work yet developed. This method is endorsed by leading horticultural experts after extensive experiments. Thousands of these trees have been planted the last few years in California, Southern Oregon, and in Washington. Our buds were secured direct from Prof. Reimer of the Southern Oregon Experiment Station, Talent, Oregon.

In our four hundred-acre nursery located on clean new soil of the Yakima Indian Reservation we grow a complete assortment of commercial fruit trees and general nursery stock. Rich soil, a long growing season, moisture under control and perfect fall weather for maturing our stock enable us to produce and deliver nursery stock unsurpassed for vigor, thriftiness and root system.



WASHINGTON NURSERY CO.

TOPPENISH, WASHINGTON
Salesmen Everywhere—More Wanted

Capital City Nursery Company

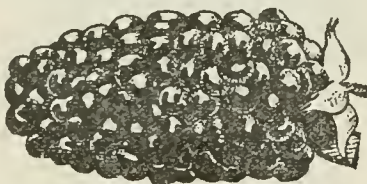
426 Oregon Building
SALEM OREGON

*Will supply you with
first class stock in*

**FRUIT, NUT AND OR-
NAMENTAL TREES,
SMALL FRUITS,
ROSES**

Send for catalog
WE Need Salesmen

CORY'S THORNLESS



MAMMOTH BLACKBERRY

The greatest horticultural novelty of the century. Very large, early, sweet, coreless and almost seedless, with rampant growing vine which is absolutely thornless. Millions will be sold as fast as they can be propagated. Get your order in early for next season. Last spring I was deluged with orders which could not be filled and I can promise but a few thousand for the coming season. Price, 50 cents each, 3 for \$1.00; \$3.00 per dozen. Will be well packed and sent prepaid by parcel post to any address. Descriptive catalog free.

ISAAC F. TILLINGHAST
Seed and Plant Specialist
212 Podel Street Santa Rosa, California

An Early Order For Fall or Spring Delivery

Placed with

SALEM NURSERY COMPANY

428 Oregon Building
SALEM, OREGON

Will receive careful atten-
tion and give you good
choice of varieties

Additional Salesmen Wanted

FILBERT TREES

I have a choice lot of filbert trees of approved varieties. The bulk of the nursery stock this year consists of Barcelona and White Aveline.

DR. J. H. WILKENS
Box 126 McMinnville, Oregon

A Few Thousand Thrifty Italian Prune Trees

Place your order now, for
we can make prompt or
spring delivery.

Kingwood Nursery

WILL M. FISHBACK, Prop.
Route 2, Box 45 E
SALEM, OREGON

FRUIT TREES NUT TREES PLANTS, ETC.

We offer a good line of Italian, French Improved, Double X and other prune trees, propagated from selected scions. Walnut grafted, Filberts, Apple, Pear, etc. Berries, Gooseberries, Currants, Plants, etc. We have something of interest for you; try our inexpensive selling system; send for Planters' List; 31 years in business.

Carlton Nursery Co.

COMPLIMENTS FROM INDIANA

▲ ▲ ▲

Franklin, Ind., October 25, 1921

BETTER FRUIT,
PORTLAND, OREGON.

Enclosed find draft for \$1.00. Please renew my subscription for one year. I like BETTER FRUIT best of all the fruit journals.

We had only part of a crop of apples this year, so we get \$1.00 a bushel for culls and up to \$4.00 for fancy Grimes.

Yours truly,

R. R. 7

A. L. MAGILL

Bees and Beekeeping

Edited by AMOS BURHANS

THE last 10 years have seen more large hives adopted in the bee yards of American apiarists than the previous 50. The advantages of the large hive are so many it is a wonder they have not been used in great numbers earlier than this. Where they are once tried they are always used.

One of the reasons large hives have not been adopted with more speed is the tendency of the beekeeper to have one standard hive for his work and to stay by it after he is started, owing to the expense of making the change. For many years the 8-frame hive was standard all over the United States and Canada. Then along came the 10-frame hive and found many who liked it until today it is the standard hive in use everywhere. The 10-frame Jumbo hive came in sight next, but did not get very far. Only a few are in use compared to the standard 10-frame hive. The Jumbo offered nothing more than the 10-frame standard except two inches more depth to the frames. It was soon seen that there was something lacking.

Then came the modified Dadant hive, based upon the record for honey production made by the original Dadant hive. The latter contained a frame two inches longer than the standard Langstroth frame used in the 8 and 10 frame hives, as well as two inches more in depth. So the Dadants in order to have their new hive conform more with the standard dimensions that have preceded it, shortened the length of the frames to that of the standard hives in use, but added another frame and spaced their frames one and one-half inches from center to center in order to give the hive better circulation.

The depth of the modified Dadant hive is two inches plus deeper than the standard 8 to 10-frame. It contains 40 per cent more room for the queen to lay in. It gives nearly 200 square inches more capacity for the bees to breathe in and provides great deal better conditions for bees to work in during summer. The danger of combs melting down is reduced to practically nothing. This is a fault and a serious one of the smaller hives, especially where they are used in the hot climates.

AND it is this lack of ventilation or capacity to hold heat that makes the small hives great swarmers. Beekeepers who know that strong colonies in small hives have a greater tendency to swarm than the colonies of big hives are always working to prevent swarming. These manipulations are the bane of the beekeeper. A divided force right in the honey flow—and this is when the majority of swarms issue—means no surplus honey from either the old hive or the new swarm in many cases. If the swarm can be returned to the hive from which it issues, there will be great returns from that colony. This fact demonstrated, then came the search for a method to prevent swarming which has ended in the yards of modern beekeepers with the use of the big hive.

Swarming is caused primarily because the bees have no room for their surplus, the queen has no room to lay or finds poor ventilation. The big hive, with the properly spaced and properly sized frames, practically prevents swarming. I saw 800 big-hive colonies from which only three swarms had issued up to the middle of July. Bees were swarming in other yards from the 8 and 10-frame hives. In my own yard, where I was working for extracted honey, I had two swarms in August from builtup modified Dadant hives. I am using standard 10-frame bodies for extracting supers on my big hives. They work fine.

For farm conditions of beekeeping, where the owner does not want a lot of manipulating or swarming to tend to, I can heartily recommend the big modified Dadant hive. Keep them in the shade to make conditions ideal; see that good queens are at the head of each colony; get on

the supers in time to get the honey and the bees will do the rest without swarming. Bees winter better in big hives because they have a greater amount of honey above the brood nest in the deep frames and greater room to store surplus on which to build up in the spring as well as enlarged clustering space. If you are just starting at beekeeping or want an easier method of handling them, try the big hives.

Statement of Ownership

STATEMENT of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of the Better Fruit, published monthly at Portland, Oregon, for October 1, 1921.

State of Oregon, County of Multnomah—Before me, a notary public in and for the state and county aforesaid, personally appeared C. J. Owen, who, having been duly sworn according to law, deposes and says that he is the 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 managers are:

Publisher, Better Fruit Publishing Company, Inc., 281 12th St., Portland, Oregon. Editor, Ernest C. Potts, 1569 East Everett St., Portland, Oregon. Managing Editor, Jerrold Owen, 281 12th St., Portland, Oregon. Business Manager, C. J. Owen, 281 12th St., Portland, 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 1 per cent or more of the total amount of stock).

Owner, Better Fruit Publishing Company, Inc., Portland, Oregon. Stockholders, Jerrold Owen, 281 12th St., Portland, Oregon; D. L. Carpenter, 800 Oregonian Bldg., Portland, Oregon; E. E. Faville, 800 Oregonian Bldg., Portland, Oregon; A. W. Stypes, 800 Oregonian Bldg., Portland, Oregon.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the 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 stockholders 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: (The information is required from daily publications only).

C. J. OWEN,
Business Manager.

Sworn to and subscribed before me this first day of October, 1921.

(SEAL) GEORGE H. CARR,
Notary Public for Oregon.
(My commission expires April 29, 1925.)

**AMERICAN GROWN
FRUIT TREE STOCKS**

Apple Seedlings, Straight or Branched. Also Pear Stocks from French and Japan Seed, American Plum, Mahaleb Cherry and Peach Seedlings in all Grades. Car Lots to Central Points.

Foreign Grown Stocks

Apple, Pear, Mahaleb, Myrobolan, Quince, Manetti and Multiflora. All Grades. In Prime Condition. Can quote in France or out of Customs in New York or at Shenandoah, Iowa. Prices reasonable.

Remember our Complete Line of General Nursery Stock for Fall and Spring trade. We are now ready to do Business. Submit List of Wants for Prices to

SHENANDOAH NURSERIES

D. S. LAKE, President
SHENANDOAH, IOWA

*Correct
lubrication*

*for your
tractor*

*A grade for
each type
of engine*



STANDARD OIL COMPANY
(CALIFORNIA)

Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

NURSERY STOCK—Italian Prune Trees and trees of all kinds. Berries and small fruits of all varieties. Buy direct and save 50 per cent. Brooks Nursery, Lafayette, Oregon.

APPLE TREES and a full line of nursery stock at reasonable prices; save agents' commission by ordering direct from nursery. Write for price list. Lawson Nursery, Gates, Oregon.

OUR EVERBEARING raspberry plants begin to ripen in May the first year planted and continue all summer and fall. We are still shipping berries to the San Francisco and Chicago markets. Our price list describes these and 30 other varieties of berries and small fruits. The Shady Oaks Berry Farm, Saratoga, California.

LOGANBERRIES, Raspberries, Strawberries; Inspected, low price, best quality. Red Feather Berry Farm, Clackamas, Oregon.

CHOICE LOGANBERRY PLANTS—Unusual low price. Shipped direct from one of the best fields in the state. Write for prices. My letter gives valuable information. How to plant and cultivate. Harry Lanum, Rt. 4, Salem, Oregon.

BEES

BOOKING ORDERS now for spring delivery. Virgins, golden and leather-color Italian queens; bees by the pound and nuclei. Write for prices; circular free. A. J. Pinard, 440 No. Sixth St., San Jose, Calif.

BEES AND QUEENS—Keep bees to pollinize your fruit. Get more and better fruit. Make a profit off the fruit and bees too. Write for circulars. Nueces County Apiaries, Calallen, Texas.

REAL ESTATE

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Washington.

FOR SALE—Irrigated Apple Orchard, Idaho: Two 10-acre tracts; water rights; tenth year. Estimate '21, 9000 boxes; standard commercial varieties. Good community with churches, schools, and railroad facilities. Convenient to state highway. A good proposition for relatives or friends. Other interests compel non-resident owner to sell; \$7000 each; terms. Address W. M., care Better Fruit.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

TO LEASE—35 to 200 acres of first class fruit land on shares. Martin Bros., Brownsville, Ore.

MISCELLANEOUS

DON'T EXPERIMENT—It costs money. For \$20 you can get my blue prints. "Dencer Drier best by test." The Dencer Drier will shorten time of drying and save money on fuel. It turns out a superior product. It costs less to dry per ton, and less to build than any other drier of same capacity. I use only one stove for six tunnels. Each tunnel holds 136 half-bushel trays. My driers have been a pronounced success for five years. Edward Dencer, Rt. 3, Box 158, Salem, Oregon. Phone 88 F2.

TRACTOR BARGAINS—Cletrac "W." only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H." never used, \$1100; Cleveland "H." slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Bradley, 425 E. Morrison St., Portland, Oregon.

HOMESPUN TOBACCO—10 lbs., \$2.50; 20 lbs., \$4, c. o. d. Ford Tobacco Co., Mayfield, Ky.

HONEY—Pure, First Quality Yakima Valley alfalfa, sweet clover honey; direct from producer. Send for circular and prices. Oliver Sires, Wapato, Washington.

WALL BOARD—Write for samples of Washington plaster wall board; won't warp, won't burn. Manufactured by Washington Building Products Co., 6851 E. Marginal Way, Seattle, Wash.

SWEET CLOVER SEED for sale—Buy direct from the producer and save money. Write for samples and prices. Address Geo. Forest, Standish, California.

FOR SALE—Italian Prunes, 50-60s, 9c per lb.; 60-70s, 8c; 70-80s, 7c; 80-90s, 6c. Processed and packed in 25-lb. boxes, or in 100-lb. hags, 1/2c less per lb. Cash must accompany each order. Edward Dencer, proprietor, Red Hill Orchard, Rt. 3, Bx. 158, Salem, Oregon.

FOR SALE—Ford Truck; Cutler two-section grader, with gas engine; box press and ladders; all practically new; \$1000—a bargain. Address W. M., care Better Fruit.

HONEY—Finest table honey: "Western Blossom" brand, in 6-pound tin can, postpaid for only \$1.45 up to fourth zone; absolutely unadulterated—just as the bees made it. York Honey Co., 30 West Main Ave., Spokane, Wash.

CLEAN VEATCH and grey seed oats for sale. W. W. Harris, Oregon City, Oregon.

PURE EXTRACTED HONEY—\$7.50 per five-gallon can; two cans, \$14.00. Everett Sauter, Touchet, Wash.

HOMESPUN TOBACCO—Chewing, 10 pounds, \$2.50; 20 pounds, \$4; smoking, 10 pounds, \$2; 20 pounds, \$3.50. Farmers' Union, Mayfield, Ky.

HONEY—A-1 extracted honey, 10-pound pail, \$1.70, postage paid to fourth zone, cash with order. W. C. Forcher, Grand View, Idaho.

HOMESPUN TOBACCO—Chewing, ten pounds, \$3; 20 pounds, \$5. Smoking, 10 pounds, \$2.50; 20 pounds, \$4. Farmers' Union, Mayfield, Ky.

FOR SALE—Fresh extracted honey: five-gallon can, \$7.50; two cans, \$14.50; six ten-pound pails, \$8.50; twelve five-pound pails, \$9.00. A. L. Tracer, Touchet, Wash.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO.
427 Oregon Building Salem, Oregon

POSITIONS

U. S. GOVERNMENT wants railway mail clerks. Commence \$135 month. Steady positions. Common education sufficient. Sample examination questions free. Write immediately. Franklin Institute, Dept. W-106, Rochester, N. Y.

WANTED—Position as orchard foreman or packing house management. Expert horticulturist and fruit man of twenty years' practical experience will be at liberty to accept position about January 1. Conversant with packing house management, the packing and grading of all kinds of fruit. Seven years past with the states of Washington and Idaho as horticultural inspector. Address Chas. G. Andrus, 626 Ninth Ave., Lewiston, Idaho.

WANTED—Position as orchard manager; college graduate; married and life experience in orchard work; now running large orchard in northwest. Address M. P., care Better Fruit.

POULTRY

BABY CHICS—By our thousands of satisfied customers we have proven that we supply some of the very best BABY CHICS offered to the people of the Northwest. From O. A. C. Strain 221-300 egg line. Place your order now for spring delivery. First hatch February 14th. Portland Seed Co., 180 Front Street, Portland, Oregon.

PURE BRED Sicilian Buttercup cockerels, \$5 each. Charles Carland, Route 2, St. Maries, Idaho.

BLUE ANDALUSIANS—Stock and eggs for sale. D. M. Calbreath, Monmouth, Oregon.

Send us a letter recounting results of your experiences in fruit or nut growing for the special January number.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

**COLUMBIA NURSERY
COMPANY**

1490 Union Ave., No. Portland, Ore.

Milton Nursery Co.
MILTON, OREGON
BING, LAMBERT, ROYAL ANN
CHERRY TREES
New Catalog for a Postal

**THE BEST IN TREES AND
SHRUBBERY
BOTH FRUITS AND ORNAMENT**
E. A. Bennet Nursery Co.
1030 Chemeketa Street
SALEM, OREGON

Hotel Hoyt

200 Rooms—100 Baths
ABSOLUTELY FIREPROOF
Corner Sixth and Hoyt Streets
Phone Broadway 1960
PORTLAND, OREGON

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.
Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The **ARCADY** *Company*
Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 12^{1/2} Jefferson St., Portland, Oregon

Also PRINTING
MULTIGRAPHING
ADDRESSING
MAILING
MAILING LISTS

**MAIN
8829**

THE PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT

PLAYING THE GAME

NEVER in the history of the fruit trade has any concern made heavier losses than we did last season in the apple deal. This is a matter well known to all the fruit trade of the United States. It is, therefore, more than gratifying to us to announce the continuance of our policy of doing business on the same basis, regardless of whether we win or lose.

We do not wish to appear egotistical, nor do we wish to put ourselves on a pedestal of superiority over our friends and competitors. However, we can look back upon our business experience of last year with pride. The policy of this firm is known throughout the world—wherever a single package of fruit or produce is handled—in a commercial way.

The code of ethics employed by this firm is based upon the American ideal of the square deal.

When Moses received the ten commandments and brought them from the mountain to the chosen people, the fruit trade was not taken into consideration. If it had been, we are quite sure that there would have been woven in much pertaining to the fruit business, and written thus, to the everlasting honor and glory of a great and grand industry.

1. Thou shalt play the game straight, irrespective of consequences.
2. Thou shalt pay all drafts, regardless of market conditions upon arrival of cars.
3. Thou shalt back thy judgment with thine own coin.
4. Thou shalt not turn down any cars, unless thy shipper is actually trying to defraud thee.
5. Thou shalt consider a contract a contract and which is made not to be broken, no matter what the cause.
6. Thou shalt consider thy firm's good name thy biggest asset.
7. Thou shalt consider it a privilege to lose, from time to time, for as long as thou canst take a loss without a kick, thou art a good sport and deserveth success.
8. Thou shalt keep one set of books, so when thy shipper calls on thee and desires to examine thy accounts, thou canst look him straight in the face and tell him to go as far as he likes.
9. Thou shalt never overquote the market, thereby giving false witness against thy neighbor, who has troubles enough of his own and which may induce the husbandman to ship goods to thee which he could have sold at higher prices elsewhere.
10. Thou shalt not covet thy neighbor's business, for there is enough for everybody and then some.
11. Thou shalt particularly take care of the goods sent to thee on consignment by thy fellow man, who may be thousands of miles away from thy business abode, but who depends upon thy honor and wisdom to see that he receives proper compensation for the harvest made by the sweat of his brow.

By playing the game according to these commandments, thou wilt live long in the land and wilt earn a heritage of which thy sons will be proud when thou art laid to rest among thy fathers for, after all, a good name is greater than worldly riches.

Steinhardt & Kelly

273-277 Washington Street

NEW YORK

102-106 Warren Street

Cordoba 2260 Buenos Aires
ARGENTINE

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.

To the Apple Growers and Shippers of the Northwest:

WE ARE taking this means of answering in the open an extraordinary 538-word telegram sent November fourth by the President of the Independent Fruit Auction Corporation of New York to apple shippers of the Northwest. Among other things the telegram objects to the sale of apples at auction. The obvious answer to that telegram is:

(a) The Auction is daily beating private sale prices.

(b) It is most difficult to move apples satisfactorily at private sale. The President's own Auction is now selling Northwestern apples at Auction for the account of its own stockholders. These stockholders, who all have facilities for selling at private sale, would not sell at Auction if they were not getting better prices than they could get at private sale.

(c) The Auction is not only selling Northwestern apples, but Northwestern pines and pears, as well as California deciduous and citrus fruits.

(d) The Auction is the only method for complete publicity, for securing the best prices, for securing the greatest distribution, for cutting down sales expenses.

The Fruit Auction Company
204 Franklin Street *New York*

BETTER FRUIT

VOLUME XVI

JANUARY, 1922

NUMBER 7

HOMESEEEKERS' NUMBER



WHERE FRUIT TREES ENRICH THE SUNNY VALLEYS

FEATURES IN THIS ISSUE:

Call of the Northwest for Settlers

Harvesting Profits From Walnuts

Fine Record With Raspberries

Homesteaders in the Fruit Game

Development Problem of Oregon

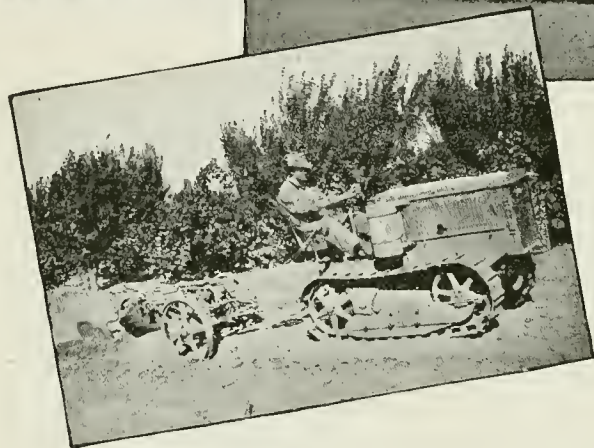
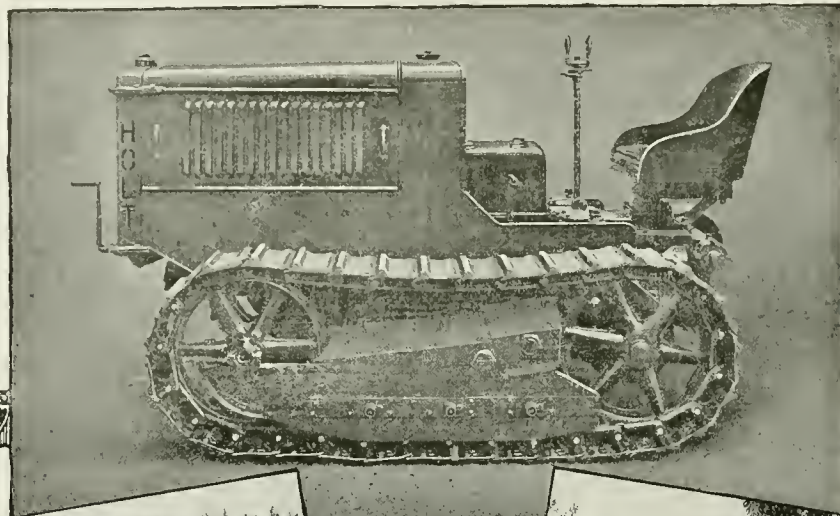
Boxed Apple Situation in Review

Improvement in Orchard Management

*20 Cents
The Single Copy*

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON

Subscription One Dollar per Year in the United States; Canada and Foreign, Including Postage, Two Dollars, Payable in American Exchange



Holt Experience Made this Achievement Possible

For years orchardists, vineyardists and general farmers have awaited a small tractor that would FULLY and PERFECTLY meet their ideal. The new small "Caterpillar" Tractor, model T-35, meets that ideal, and more—it surpasses even the high expectations of those who, judging by past achievements, have expected Holt to produce a small tractor of exceptional merit.

In the T-35 "Caterpillar" Tractor, size has been reduced without sacrificing power—weight has been cut down without impairing strength—and, above all, Holt standards of economical, dependable, long lived performance have been fully maintained.

Like other "Caterpillar" models, this new small tractor is not only BUILT FOR service, but is BACKED BY service, too. It is sponsored by a Pacific Coast factory with a wide flung organization ready and able to see that you get service — anywhere, any time.

The T-35 is the ideal tractor for

orchards and vineyards and for every power requirement of small farms. It is also a handy unit to supplement the work of bigger tractors on large acreages. It drags the cultivator, sub-soiler, plows, getting close under trees without damage to limbs or trunk.

This little tractor is only 48 inches wide, 52 inches high, weighs only 4000 pounds. Has 14 draw-bar horse-power. Tracks are 10-inch width. Ground pressure less than 4 pounds per square inch. Ground clearance 11 inches. Overhead valve and camshaft motor, fully enclosed, full force feed lubrication. Multiple disc main and steering clutches. All bearings anti-friction type. Not an ordinary steel gear or shaft in the entire tractor—all chrome nickel or vanadium steel.

"Caterpillar" T-35 Tractor has created a sensation—it immediately leaped into leadership in the small tractor field. Write at once for descriptive literature describing it fully.

CATERPILLAR

Reg. U.S. Pat. Off.

T-35 Tractor

THE HOLT MANUFACTURING COMPANY

Los Angeles, Cal.

Stockton, Cal.

San Francisco, Cal.

Peoria, Ill.

Spokane, Wash.

Friend Sprayers



- Five Sizes
- High Pressure
- Cause less trouble
- Cost less to operate
- Give real satisfaction

Distributed in the Northwest by

Hood River Spray Co.

Hood River, Oregon

T. J. POUPART

(John Poupart, William Ravenhill)

Covent Garden, London, W. C. 2

REGISTERED



TRADE MARK

The Largest Firm of Fruit Salesmen in Great Britain

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)

COMMISSION THE EXCLUSIVE BASIS (Purchase propositions
cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

Cables
POUPART,
LONDON
Codes
A B C
(5th Edition)
Marconi
International

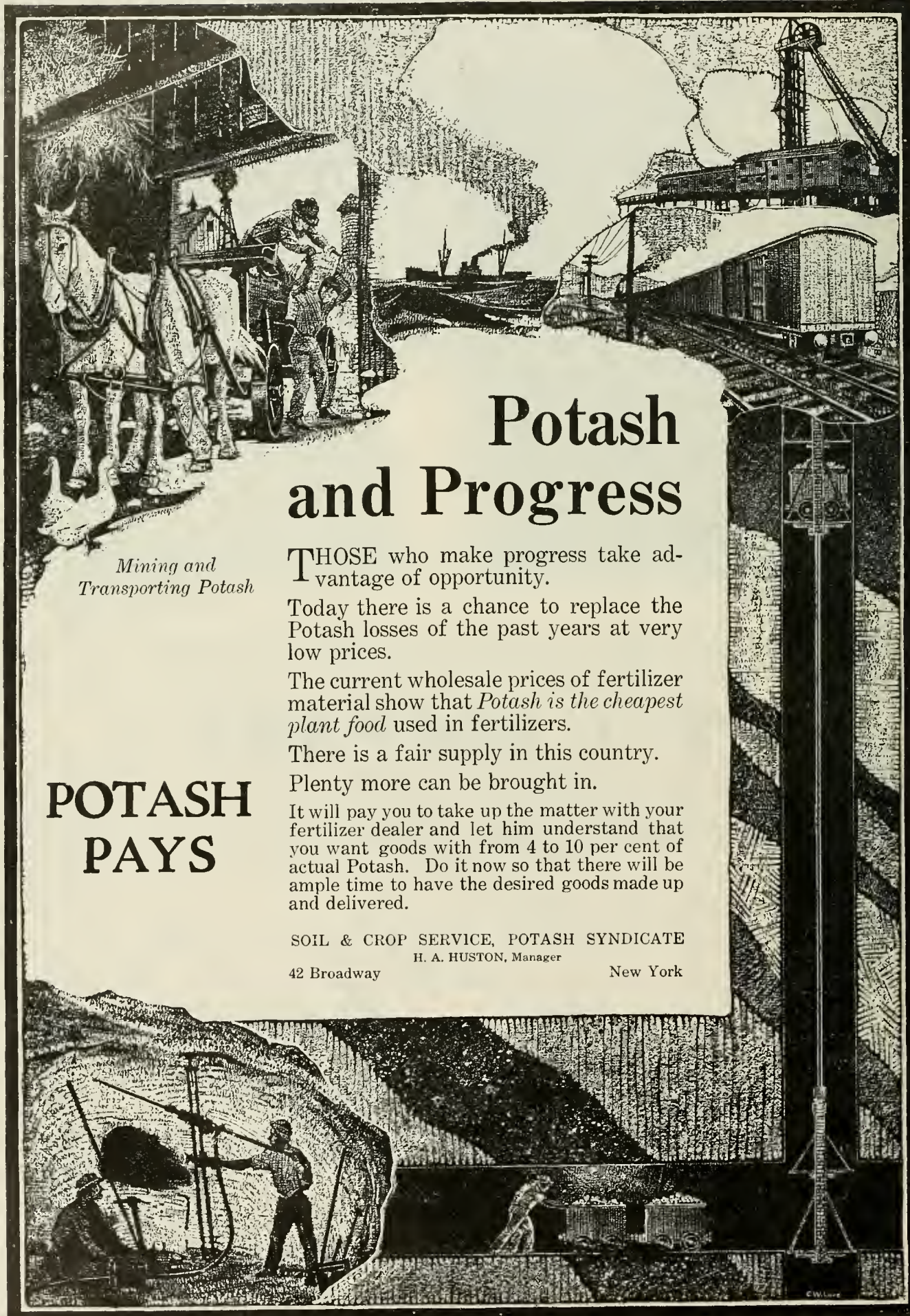
Bankers
Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.

SPECIAL NOTICE
We have now
opened a branch
at Liverpool which
will be conducted
on the same lines
as London. Grow-
ers can communi-
cate direct with
the manager,
T. J. POUPART
54 Stanley St.
LIVERPOOL

We are pleased to
announce that we
have opened Paci-
fic Coast offices,
Mr. Sam Birch in
charge at 807 Wil-
cox Bldg., Port-
land Oregon.
Phone, Broadway
5462. Mr. Birch
will be pleased to
give full informa-
tion regarding the
Poupart service.

Members of





*Mining and
Transporting Potash*

Potash and Progress

THOSE who make progress take advantage of opportunity.

Today there is a chance to replace the Potash losses of the past years at very low prices.

The current wholesale prices of fertilizer material show that *Potash is the cheapest plant food* used in fertilizers.

There is a fair supply in this country.

Plenty more can be brought in.

It will pay you to take up the matter with your fertilizer dealer and let him understand that you want goods with from 4 to 10 per cent of actual Potash. Do it now so that there will be ample time to have the desired goods made up and delivered.

POTASH PAYS

SOIL & CROP SERVICE, POTASH SYNDICATE

H. A. HUSTON, Manager

42 Broadway

New York

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, JANUARY, 1922

NUMBER 7

Call of The Northwest for Settlers

By THE EDITOR

VISIT any state of the great empire of the Northwest and its residents will proudly point out to you the wonder spots, where industrious communities have transformed the virgin valley or sagebrush plain into a veritable garden of fruitfulness. Such tracts, no one of which has ever yet reached the limit of its productivity, strike into amazement the easterner, uneducated as to the resources and the productiveness of these fertile empires.

To the resident of Idaho, or Washington or Oregon this is highly gratifying, but—

Whatever the reader may have thought from the opening sentences, this is no high-flown, eulogistic discourse on attractions and resources of the Northwest. It is a little study of what the Northwest most seriously lacks. A frank admission of this great need, if you please, coupled with

For the greater portion of residents now living in the Pacific Northwest came from a former home in the East or Middle West. The writer believes that this section's greatest need is that of drawing thousands upon thousands more settlers here from the same sources. In fact, it is pointed out, real progressive development of the Northwest vitally depends upon such further immigration. There is no attempt to catalogue the attractions and opportunities the Northwest offers. Instead there is set up the contrast between land ownership conditions here and in the East. There is tied in the urgent plea that every homeseeker study these contrasting conditions—then base decision on his own findings.

appeal to the men and women who might profit most by meeting this need.

Sure, it fans up real gratification when Idaho points to its Payette Valley, or Washington to its Wenatchee country or Oregon to its Hood River district. But—here's that same "but" again—there are not enough of them.

It is senseless and futile to attempt concealment of the outstanding vital need of the Pacific Northwest—the need for more settlers, that many more sections may blossom and flourish under intensive cultivation.

Were it not for an equally important corollary it would be useless to devote this space in *Better Fruit* to discussion of this matter. There is, however, this perfectly patent corollary—that in the central and eastern states there are thousands of farmers, renters and workers who would profit in high degree by locating themselves on waiting lands of the Northwest.

If proof were wanted that those thousands of families now doing no better than win a living in the East could advance themselves toward financial independence by locating out here, such proof could be

furnished in abundance by hundreds of our subscribers. This number carries a mere smattering of available reassurance on this point.

For the eastern homeseeker into whose hands this journal may fall and who may want more proof of the Northwest's advantages or more details of its resources, it is only necessary to write the state officials who have articles in this issue, to offices of the great railroads serving this territory, or to individual chambers of commerce or commercial clubs.

This article will also leave it to others to tell the appeal of the Northwest's attractive climate; its healthfulness; its pure,

Personal Message

From Governor Ben
Olcott of Oregon

It is with pleasure I join in issuing, through your valuable magazine, an invitation to people of the East seeking new locations, to give careful and earnest consideration to the attractions and resources of the states of the Pacific Northwest. Great opportunities lie in these states. We have wonderful horticultural sections here, far-famed for their fruit and berry production. We have wonderful agricultural and industrial resources.

I would advise, however, that the easterner who intends to invest in any of our western states, come here and see for himself and be thoroughly satisfied as to what he is doing before he actually invests his money in land.

Personal Message

From Governor L. F.
Hart of Washington

I can imagine no more contentment nor independence than that which comes to the farmer who builds his future on the diversified crop, and has only a small acreage which he and his family can till and cultivate alone. Thus is his market assured, and he need have no fear of loss of crop through failure to secure help at the harvesting season.

Berries, fruit, a little grain and alfalfa, and cows and chickens—there is no better state than Washington for such a farm, and life holds no finer occupation or chance for happiness.

sparkling water; its lures for the hunter and fisherman, and its mountain, lake and seaside resorts, all seldom more distant than a short motor drive.

TO THE small farmer of the east, to the renter on high priced land and to the man of small means who wishes a home of his own on the land, it is both a pleasure and a duty to point out the Northwest's pre-eminent claim to consideration.

No place in the domain of this United States is there a more promising or attractive opportunity for the man of small means to win a home on the land than in our northwestern states. This is a broad statement, but he who challenges it takes a rather hopeless end of the debate.

In the first place, here in the Northwest it does not require 160 acres, or 80 acres, or even 40 acres to insure a good living and something more. The visitor to any intensively developed section can readily verify this fact. He will have no trouble at all in finding families happily located on 20-acre tracts, on 10-acre—yes, right down to two-acre and one-acre tracts. He will have not the least trouble in finding families that are more prosperous and contented on 10 acre tracts than the majority of renters on a quarter section of 160 acres on the middle western plains.

Partially developed lands of the older valleys; logged-off tracts in the regions of abundant rainfall, and small farms in the irrigated sections await the homeseeker of very moderate means. What opportunity has the renter of Iowa or Illinois, farming land priced at \$300 to \$500 an acre, to become a land owner? Mighty little, if you are perfectly frank in your answer.

Bring that eastern renter with his \$2500 or more of savings to the Northwest and there isn't a thing in the world to prevent him from becoming a ranch owner at once. Of course, he is not expected to purchase a highly developed tract. It is decidedly better that he obtain such land as he can readily manage and develop it intensively himself.

Picture the unfortunate renter on the \$400 land today, trying to cover a cash rental of \$40 to \$60 an acre—with corn selling at 25 cents a bushel and oats at 20 cents—and have something left for himself. To pay a \$50 rental requires 200 bushels of corn. A fine chance for profit after paying the landlord! A wonderful future ahead, indeed!

Picture that same renter as paying down \$2500 or \$3000 on 20 acres of good land in a valley of the Northwest. Suppose he is an earnest and faithful worker and spends 15 years in paying any balance and developing a \$15,000 ranch of his land. *Better Fruit* readers know he can do this. They know, too, that it would be his own fault if he and his family did not enjoy a lot of comforts of life while accomplishing this development. Any number of

them have been achieving just such a thing themselves.

THIS picture is conservatively drawn, Mr. Homeseeker. Nothing would give the writer more pleasure than to have you check up on it. Your findings would absolutely remove any doubts that may now trouble your mind.

Since there is this contrast in opportunities for the man of moderate means between the East and the Northwest, why is it, many will ask, that more settlers do not flock to our lands? The answer is simply that they do not know of the opportunity that this region offers them. Quite aside from the reflex benefits in meeting the greatest need of the Northwest, people of the fruit industry can do no kindlier service for their brothers of the Middle West and East than invite their earnest attention to advantages and opportunities of this region.

Mr. Homeseeker of the East, the writer urges upon you the supreme test in picking a new location: learn how effectively the region has held its immigrants.

As a newspaperman in a middle western state, dissatisfied with conditions there, the writer made this test for himself about a

decade ago. From what states were the smallest numbers of our restless emigrant returning, dissatisfied, he asked. The answer he easily obtained from his paper's mailing list and his own wide acquaintance-ship over the county.

It would be almost malicious libel to name those states from which large numbers of "former citizens" were hurrying back in disgust. The test showed, absolutely, that fewest came back from states of the Pacific Northwest. In truth, it was hard to find any who had returned from these states because dissatisfied. The simple little test immediately solved the writer's moving problem—solved it rightly, thank you.

It must be added that conditions here have greatly improved since then. Every prospective homeseeker is urged to make this same test for himself. He is urged to come in person, if he wishes and can, to study the Northwest's need for more settlers and the future it holds for them. Boom days have long since departed, and he may readily learn just what satisfaction and reward the Northwest offers him in return for his money, his efforts and his time.

Harvesting Profits From Walnuts



Here is a view in Charles Trunk's beautiful, thrifty walnut grove, at Dundee, Oregon

SOME of the best walnut groves of the state of Oregon—the Northwest, it might be said—are located at Dundee, and those growers who have the older and larger trees are enthusiastic over walnut growing. Results obtained with their own trees have convinced them that walnuts are a crop deserving more consideration.

Dean of the Dundee growers is Charles Trunk, who has plantings totaling 70 acres, 38 acres of which are of bearing age, and

never loses an opportunity to urge the planting of more walnuts. He began with the planting of a 10-acre tract in 1906 and has been in the game ever since. Walnuts have paid him well; so well that he kept increasing plantings, and a year ago purchased 12 acres of trees.

Here is what Mr. Trunk thinks about the wisdom of planting walnuts, providing,

(Continued on page 23)

Idaho, Empire of Promise

By FREDERICK V. FISHER

Manager Idaho Development League

IDAHO on the school maps looks like a wedge between the giant state of Montana and the Inland Empire of Washington and Oregon. But, in fact, Idaho is twice the size of Pennsylvania, equal to New England and New York and larger than any eastern or middle western state. It stretches north and south from the snow line of Canada to the deserts of Nevada, close to the gates of California. It takes the rumbling overland train a day and night to cross Idaho from the coal mines of Wvoming to the cattle ranges of Eastern Oregon.

It is a scenic wonderland. In the north, amid the pines and the Couer d'Alenes, is the greatest lake country of America. In its heart is the vast wheat belt where, at one little way station in 1921 they shipped 1,000,000 bushels. Looking down on both north and south are the snowy summits and jagged outlines of these Alps of America, the Saw Tooths. On one side is the Grand Canyon of the Snake, through them flows the picturesque Salmon and at their feet lies the weirdest place in all North America, the Valley of the Moon with its 63 extinct volcanoes and strange ice caves. The Yellowstone is its portal, the far winding Snake its life blood, the thundering Shoshone out-rivalling Niagara, its expression of power and possibilities.

Idaho is the third largest water-power state in the union, with only one-seventh of it developed. Idaho is best fitted of any state for dairying. Here is the land of contented cows if there ever was any. Here are found mild winters, good feed condenseries close at hand, assured markets. One of the largest cheese companies in the land has just offered to buy all the first class cheese that Idaho can produce. In the north are the vast forests of commercial lumber, with the largest stretch of white pine in America; wheat in the center; mines in the mountains with limitless pastures to the south and then, above all, wonderful fruit country of the valley of the Snake river.

In fruit, Idaho excels. Much rare fruit marketed in the past under fanciful names as coming from other states, grew in the rare climate and warm sunshine of the clear skies of Idaho. Delicious Apples from the Mesa farms are noted, peaches that drip sweetness, small fruits with fine flavor and then those superb things, the Idaho prunes.

Irrigation in the south assures the crop, no matter whether the skies are favorable or not. With the constant opening of new irrigated tracts and the coming great project of American Falls a vast realm is opening to the homeseeker and grower of fruits.

Idaho is pre-eminently a home state. Good

roads, rapidly building, lead to small towns and large ones, with all the conveniences of civilization. Her educational system is unsurpassed, starting with the grammar schools and reaching clear to a strong well manned State University.

Idaho has the climate, the soil, the resources, the civilization, the opportunities, all she needs is folks—folks with red blood and life ahead of them, who love the open, ready to work and grow up with the state and reap in after years the finest results of life in home, plenty and neighborliness and all the best virtues and blessings of America at her best. Come see Idaho. Come live in Idaho.

Finding Contentment

By T. D. HUSSEY

Clark's Fork, Idaho

ON SEPTEMBER 1, 1919, my wife and I left Kansas City, Mo., in our "flivver" for the "wild and wooly" West, as we supposed to find it. We had decided that it was a life of too much monotony to live in a city, daily viewing only artificial life.

We drove through Cheyenne and Boise and then over the Mackenzie Pass to Eugene, Oregon. Then we visited Portland and Spokane and finally landed in Bonner county, in the Panhandle of Idaho.

It certainly was a grand sight to see the fine varieties of fruit here, especially the apples. As a non-irrigated country, this appealed to us and we acquired 80 acres, of which 20 acres is in Delicious, Winter Banana and Winesap apples, nine years old. The trees had been cultivated only three years and then left in clover and timothy sod. There had been no pruning and spraying and consequently had been no fruit.

In the spring of 1920 I pruned and plowed and disced until the orchard was in good state of cultivation. I sowed the land to wheat in the fall of 1920 and to clover in the spring of 1921.

In the fall of 1920 I got 16 boxes of apples. This year, the crop was 310 boxes and, in addition, I made 125 gallons of cider. I have obtained a good terminal growth, good foliage and color. I will plow the clover under next spring.

This is my first attempt to grow fruit commercially, but if other fellows can I can. Our small fruit has been a money-maker. Besides what we have sold we have 300 quarts of home-grown fruit in the cellar.

We have a cow, poultry and pigs, God's own sunshine, pure mountain air, "sparkling" water 18 feet from the surface, and the world for a market for good fruit. We have the thought of achievement in a good cause, which is something satisfying.

It is my motto to always be a booster, or move. If you are interested in fruit subscribe for *Better Fruit*. It has helped me wonderfully.

Opportunities for Growers

By J. GRANT HINKLE

Secretary of State and Commissioner of Immigration, State of Washington

THE problems that confront the American people, when the last analysis is given, are brought about by the facts that mines become exhausted, gas wells cease flowing, oil wells likewise fail, forests are hewn down and but little attention is paid to reforestation. These facts place the problem directly up to us as to what shall take the place of these resources when they are gone. The Northwest is particularly fortunate in having large areas of land, and abundant water for irrigating the arid portions.

It has been discovered that the most reliable and productive results may be obtained from fruit and berry culture, for the reason that there is an ever increasing market for these products. The Northwest is the ideal spot for the highest development of fruit raising.

Every year the problem of taxation becomes more and more serious. At the present time it is pretty generally considered that real estate is bearing all of the burden that can possibly be carried and that anything additional will result in confiscation. In a recent convention of the secretaries of state at Helena, Montana, one of the number forcibly illustrated our difficulties in the Northwest with our taxing problems.

This speaker said: "Your states are four times the size of my state, yet your people are ambitious and want everything under the sun that we of hundreds of years older commonwealths have, and even now almost all of your states have more miles of hard surfaced roads than we have in my state. Your schools are well up to the top when measured by educational standards. There are but two propositions for you. One is to cut down on your good schools and good roads program, which you are not likely to do, or, get about 5,000,000 of the people in the East to locate in each of your states and develop your resources, thus putting their shoulders under the burden. We have six times your population and one-fourth the area and it does not seem strange to me to hear you gentlemen report that your taxation problems are a real burden."

Everyone can find truth in this man's statement. Fortunately for us, the states of the Northwest are able to absorb many more millions of people when our irrigation systems make it possible to develop more lands.

No other industry is quite so inviting in the Northwest as the berry and fruit culture. Our products are already sought in the leading markets of the world and command the highest prices. The Northwest invites the man who can make trees and vines grow, blossom and bear fruit, where nothing grew before.

Homesteaders in the Fruit Game

By FLORA A. MORGENSEN

Mosier, Oregon

SOMETHING like 20 years ago my husband and I found it necessary to move to Hood River for the summer. We moved there in March and were there during the strawberry season, staying through the long bright summer and until the rosy cheeked apples were harvested.

Hood River was then famous for its strawberries as it now is for its apples. During the summer my husband, in these surroundings, became enthused over fruit growing. While on a business trip into the big wheat country, 100 miles further out, he discussed the possibilities of growing fruit for local consumption, somewhere in the wheat belt.

"It can't be done," the wheat men said, "and, besides, wheat growers don't buy fruit."

"It can be done and I will show you," said my husband.

The result was that before he returned that boy husband of mine had filed on 160 acres of land in the edge of the wheat belt, intending to show the wheat men that he could grow and market fruit among them at a profit. I was aghast. Neither of us knew anything about farm life and had certainly not included it in our plans for the future.

I had in my possession, however, a copy of an excellent farm journal and there were also in the house we were renting piles of back numbers of several fruit growers' magazines. Of these I selected copies of *Better Fruit* and one other standard magazine, for which we subscribed, and early in November of that year we moved out on our homestead, with youth, inexperience and determination as our chief assets.

We decided to build slowly, but well, and the house was ready to occupy early in December. A level place was then cleared and set to strawberries. Next a large garden spot was cleared, as we would depend largely on the sale of vegetables the first year. Then, as land could be cleared, it was set to raspberries, blackberries, loganberries, currants, gooseberries, etc. These are early bearers and would be furnishing us with cash, we figured, while we were waiting for the orchard to begin bearing. The orchard we set out as rapidly as possible.

WE WERE pioneers in the fruit industry. Experience was our teacher so we tried out varieties very carefully, selecting those best suited to our location and market. We planted largely peach, pear, cherry, and apple trees, with a good sprinkling of plums, prunes and apricots. Our location seemed especially suited for

grapes, so one hillside was set to early and late varieties, while row on row of beehives were added with excellent results.

The second year we had to begin hiring help to handle our berry crop. Our packages were standard and up-to-date. We succeeded in finding not only a market locally, but our business circle widened each season. At times we were fairly mobbed by patrons. Some year's crops were engaged practically a year in advance. We could not supply the demand.

Products of our vines and trees were winning blue ribbons at all the fairs in the country, and our farm was known for a good many miles around by its well-selected name. Of course we had ups and downs, for this is no fanciful sketch, but as one after another of our neighbors made final proof on their homesteads, in order to borrow money to support their families, we were making improvements, building our home and something more than supporting ourselves, in the little sheltered valley at the foot of the wheat fields.

The love of nature and of making beautiful things grow is eternal in the hearts of some, and we are still in the game—back in the land of the big red apples, which go to the markets of the world. And we have found it a good game.

Model Packing Plant

WHAT is credited with being one of the largest and most efficient packing and storage plants in the world is that of the Pehastin Fruit Growers' Association, at Pehastin, Wash., a unit of the Skookum Packers' Association.

The plant is electrically equipped. Nine electrically operated graders were in operation when packing was in full swing. Conveyors run by electricity carry the apples from the receiving platforms to the storage rooms and other conveyors transport them out to the graders. After the apples are packed they are similarly carried to the storage rooms again, or to the loading platform if destined for immediate shipment.

During the busy season the plant employed a force of 225 persons and easily handled 7500 boxes, or 10 carloads of apples in a 10-hour day. There are two distinct units to the plant, one devoted to packing and common storage and the other to cold storage and the grading department. The financing, planning and construction of this model plant is credited largely to the efforts of J. A. Warman, who was manager of the association until elected president of the Skookum Packers' Association.

One other valuable feature of the big

plant is a dormitory, called Skookum hall, with dining room in connection, where 125 or more employes usually take their meals. The dormitory provides accommodations for 160 single employes. In addition there is an apartment building, where 25 married couples may live and keep house.

New Walnut Markets

RESULTS of this season's work in marketing walnuts offer a most promising outlook to the Northwest grower. Early in the season the Oregon growers met and decided to use standard grades in handling the crop, and for the first time Oregon walnuts have been put on the market in large quantities under uniform grading rules.

Prices were opened at the same time the California growers named prices, but at a two cent advance over California prices on the best grades and a cent on the lower grades. Practically the entire tonnage was sold within a week, with buyers still clamoring for more. Though the volume of this year's crop was not larger than to supply the immediate Oregon demand, the Oregon Growers' Association—with the intent of feeling out new markets for future sales—sent samples of the nuts to representatives in the east and in England.

The returns from these samples give a most encouraging outlook to the walnut growers. A New York representative to whom samples were sent said that the nuts were of the finest quality he had ever seen and that he could use six cars of them if they could be supplied. Other brokers asked for lots of one and two cars. A middle west man, in order to be sure that he will get some of the Oregon Mistland nuts, has already put in his order for a car of the 1922 crop.

English representatives are desirous of securing a substantial tonnage, preferring the Oregon Franquettes to those which they obtain in France on account of the high quality of the grade and pack.

Standardized grading is one of the most important factors in the marketing of the product and, though this season's crop was easy to dispose of, the association is laying plans which will aid in marketing a larger crop in competition with other large producing centers which furnish nuts to the same markets.

An ordinary cream separator may be used to clarify apple cider on the farm, experts have disclosed. The separator may clog up a bit, but need only be cleaned out occasionally to insure a clear product.

▲ ▲ ▲

Of 753 eastern farmers who replied to a request of the Department of Agriculture that they tell what they had found the chief advantage in owning a motor truck, 91 per cent replied, "saving time."

Improvement in Orchard Management

By GORDON G. BROWN

Horticulturist at Hood River Branch Experiment Station

FOR A number of years the Hood River branch experiment station has been conducting a searching investigation of the apple orchard business in the Hood River Valley. Comparatively few statistics were available which definitely indicated the economic trend towards which the fruit growers were moving. The study has been to determine "who's who" in the apple business and, as far as possible and practicable, the underlying causes which are associated with a high standard of success upon the one hand, and only mediocre or poor results upon the other.

The aim has been to pick out the important factors in orchard management such as pruning, thinning, propping, tillage, irrigation and fertilizer practices and to study these with reference to differences in net results as above indicated. The difference in time spent in these operations and in the case of spraying, for instance, the amount of material applied has been used largely as a working basis. Average costs per acre and per box in many cases have been determined on a six-year basis. This includes average costs for the period 1913 to 1918, inclusive.

The period mentioned is one which is naturally divided into two distinct epochs: The one from 1913-1915, inclusive, and the other from 1916-1918, inclusive. The former is designated as the First period and the latter as the Second period. The former period is identified by clean cultivation practices, lack of cover or shade crops and fertilizers. An inadequate spray program also prevailed. Tree growth during this period was inadequate; yields were small; dry rot, fruit pit and small apples resulted.

The Second period marks several distinct changes in management for the better. Nitrate of soda as a fertilizer came into general use. A three to five pound application furnished immediately available nitrogen which had been so completely depleted by clean tillage. The use of alfalfa, vetch and clover became general. An improved spray program, accompanied by better equipment, also featured the Second period.

As a result of an improved program yields increased 46 percent. The percentage of extra fancy fruit increased from 34.6 to 47.0 or 12.4 percent. A corresponding increase in gross value of fruit, net to the grower, by this selling agent also resulted.

The writer has divided the orchards into groups upon the basis of merit. This grouping relates to a six-year average performance, as related to yields in packed boxes per acre (exclusive of culls and cook-

Even horticulturists and growers are likely to overlook the fact that important progress has been made in recent years in the more scientific management of commercial orchards of the Northwest. In making a study of the orchard management in the Hood River Valley, with particular reference to yields, grades and value of fruit, Gordon G. Brown has done a service of real value to every Northwestern apple grower. In setting forth the results of his study, as done in this article, he has rendered an additional service of great value. The grower who will carefully mull the facts here presented, comparing with results in his own orchard, is sure to obtain pointers of value as a guide for his own practices in the future.

ers); percentage of extra fancy and four-tier sizes and gross value of fruit per acre. The groups are arranged as follows:

Yields per acre—Group 1, 386 boxes; 2, 257 boxes; 3, 186 boxes.

Percentage of extra fancy—Group 1, 55.0 per cent; 2, 44.9 per cent; 3, 35.3 per cent.

Percentage of four-tier sizes—Group 1, 65.0 per cent; 2, 51.5 per cent; 3, 33.0 per cent.

Gross annual value of fruit per acre—Group 1, \$461; 2, \$290; 3, \$204.

THE reader will at once note great differences in the average performance of the different orchards as shown in the above grouping. The difference of \$257 per acre, gross value, between Groups 1 and 3 is most striking.

What are the associated causes? In the first place, the writer wishes to make plain that the orchards in all groups are quite representative of the section. The average age is over 15 years. Inferior orchards subjected to gross neglect and evidently inferior are not included in this study.

The one big factor in large gross returns is that of yields. Heavy tonnage permits of a large volume of business. On an average there is little difference in the percentage of extra fancy fruit or four-tier, sizes produced by the orchards in Group 1 (\$461 per acre) and Group 3 (\$204 per acre). On the other hand Group 1 produces 365 boxes per acre as an annual average against 182 boxes for Group 3.

SIZE OF ORCHARD—One of the most interesting comparisons relates to the acer-

age handled. Large acerages and large yields appear incompatible. Likewise, to a certain extent, we find this true of the percentage of high grade fruit produced. Group 1 (yields) averages 10.01 acres of bearing orchard; Group 2, 14.46 acres; and Group 3, 25.73 acres. Furthermore Group 1 (55.0 per cent extra fancy) handles 16.50 acres as against Group 3 (35.3 per cent), which handles 23.69 acres. Very few exceptions are found to the above rule. The reasons are obvious. Small acerages usually receive better care and are personally supervised by the owner, who takes an active part in the work. On the other hand, much hired help is used on the larger tracts and often inefficiency creeps in.

IRRIGATION—Irrigation is a fundamental practice in the Hood River Valley. Rain-fall for the entire year, though ample, is not sufficiently well distributed during the summer months to permit ample tree growth and maximum production. Since the introduction of alfalfa or clover in the orchard the moisture requirements have practically doubled. This varies according to the age of plants and methods of handling. Where alfalfa is cut for hay it is evident that maximum moisture requirements prevail. The customary practice is to make at least one cutting for hay during early summer. A second cutting is often made before picking time, but the hay is not removed. The aim of such a practice is to permit organic matter to return to the soil.

Thorough discing during early spring is the usual method of incorporating such organic matter within the soil. Such a practice also tends to discourage weed seed dissemination and to form a mulch. Some growers do not cut alfalfa in the orchard, for thus the moisture requirements are greatly reduced. Since alfalfa, when allowed fully to mature, returns more plant food to the soil than when it is cut at an earlier stage of development, it seems reasonable that the practice of not cutting would afford better results.

Striking differences appear under labor charges, "man days per acre," for irrigation. Therein probably lies one of the fundamental causes for differences in results. It is apparent that where the total supply of water is only four "miners inches" to the ten-acre unit, economy in application must be practiced. Such economy is obtained in careful attention to details such as the proper making of rills, the head of water used, etc. Often water is allowed to run in one part of the orchard too long. The result is a failure to irrigate the orchard with sufficient frequency and

(Continued on page 19)

Fine Record With Raspberries

By W. S. THORNER

Clarkston, Washington

DURING the summer of 1912 the writer made a careful study of the possibilities of the commercial culture of small fruit in the Lewiston-Clarkston fruit district, and especially investigated the growing and marketing of the red raspberry. At that time there were no plantations large enough to be considered commercial and there was practically no market for the small surplus of the home gardens. As a result, the situation appeared anything but attractive.

Two or three factors, however, were apparent. First, only a mass of many varieties were grown and no one seemed to know what was best adapted to the district. Second, the Puyallup, Sumner, Monroe, Snohomish and other coast districts were marketing at a profit large quantities of small fruit, and there was only one conclusion possible. Why, should not this district grow and market berries in the surrounding country?

As a result of the study the writer planted over 30 varieties of the best and most promising red raspberries then in cultivation, and proceeded to study their behavior and habits for three years. On a piece of land from the farm and the necessity of depending almost entirely upon hired help it was very difficult to secure accurate results on all of the varieties grown. Nevertheless, it was soon apparent that only two or three varieties were at all promising, and none of these showed sufficient promise to make it advisable to plant extensively.

About this time there appeared a new and strange raspberry plant in our patch. It soon surpassed all other varieties in vigor, freedom from sunburn, hardiness and bearing possibilities, and when it fruited we realized it had surpassed its neighbors in size of berry, richness of flavor, and productivity. What more could we ask in one variety?

In 1916 we made our first patch, planting of this variety one-tenth of an acre, for further trial. It was given ordinary cultivation and irrigation but no fertilization. It continued to maintain the same high stan-

dard it established at the start, and continued to produce canes from six to sixteen feet in height, depending on richness of the soil.

The first real crop was harvested during the summer of 1919. While two families picked for table use all berries desired, and canned abundantly, over \$300 worth was harvested from the tenth of an acre. The price per crate received was a little better than \$3.70 per 24-pint crate. We then realized to a certainty that our new plant was worthy of a place in any commercial planting. The people to whom we had sold fruit began to call for the new variety, and the canned product more than ever upheld its reputation as a high class berry.

Early in the spring of 1920, another half acre patch of this variety was planted, as was another of the most profitable of the varieties in culture. These two varieties were given practically the same care for the season, and because we did not feel that there could possibly be much of a crop on either patch, no staking or supports were given to the plants. It was apparent early in June, that while no supports would be necessary in the old variety, our new one would need support and that a very promising crop was beginning to develop.

A careful tabulation was kept of the fruit harvested, and at the close of the season we had obtained just a little over \$300 worth of fruit from one-half of an acre of one-year-old plants. The fruit was sold at a little better than \$2.87 per crate.

The plants were set in rows $7\frac{1}{2}$ feet apart, and thirty inches apart in the row. While our plants have never been well fertilized, it is needless to say that from now on they will get the best there is available.

Some of our friends have insisted that we now name this new berry and have been kind enough to suggest that we call it the "Thorner." I trust that it is worthy of a real name, and that it will add to the pleasure and profit of the raspberry growers here in the Pacific Northwest. I know of no one thing that I would rather do than give something worth while to my thousands of fellow fruit-growers here in the Northwest.

Furthermore, I wish that BETTER FRUIT have the credit of officially announcing the development of my first plant addition to the horticultural world.

I realize that it is a horticultural crime to add one more name to nomenclature, and have hesitated for years in doing so, but now I feel we have something worthy, especially since there is such an awakening in the field of small fruit.

The culture of raspberries has advantages over vegetables, in that one can plant in even poor soil and increase its fertility as the opportunity comes. With vegetable crops it is almost a waste of time and labor not to have the soil in first-class shape. The raspberry grower likewise has the advantage over the orchardist in getting returns in less time and while the original outlay is greater, it does not cost very much more to grow an acre of raspberries than an acre of apples.

It would of course be folly for every one to plant raspberries, but they can be planted profitably in many sections where they are not now grown. We are finding them a splendid companion crop with other fruits.

New Variety of Apple

A new variety of apple is reported as having been developed on the fruit farm of William D. Johnson, at LeRoy, N. Y. It has been named the "Winter Blush," by Asher S. Davis, farm orchardist. In appearance it is much like the Lady Blush apple. The flavor is tart, but pleasant, resembling the Banana apple. It keeps well and is best for eating about holiday time.

Back in 1913 Mr. Davis discovered an apple seedling growing in a fence corner and instructed his men to save it. Later it was transplanted and trimmed. About two years ago, when the first fruit appeared on it, Mr. Davis recognized it as a new variety.

Elimination of the war tax on express shipments, effective today, will save \$1,500,000 a month for shippers.

BEST IN YEARS

Nampa, Idaho, Dec. 17, 1921.

Editor BETTER FRUIT,
Arcady Building,
Portland, Oregon.

Dear sir: The December number of BETTER FRUIT was the best issue I can remember reading in years.

I am remitting for seven subscriptions as Christmas gifts for my friends, beginning with the December number. My own subscription is paid until December, 1925.

Very respectfully,
E. F. STEPHENS



TYPICAL FINELY KEPT BERRY YARD OF THE NORTHWEST

Apples in Big Figures

Ten thousand tons of apples, 20,000,000 pounds, will be dehydrated this season by the King's Food Products Company, in their plants at Salem and The Dalles. To meet this requirement shipments have been

drawn from a wide territory, even including Roseburg and Sutherlin, on the south, and the Yakima district on the north. It is said that the output was all sold in advance, this select dehydrated product creating such a demand that it can never be met without an expansion of present plant capacities.

Reasonable expectations from walnuts, cultural requirements, disease and pest control measures, and directions for harvesting and curing the crop are treated in a new bulletin of the University of California, at Berkeley. The bulletin is free to those who wish to send for it.

Lower Machine Prices

—a factor in a brighter outlook for 1922

MOST of the readers of this paper know that we have reduced our prices on farm machines for 1922. The lower figures apply on practically our entire line of grain, hay, and corn harvesting machines, plows, tillage implements, seeding machines, etc.

Reductions in prices of farm machines and other articles the farmer buys is one of the many indications pointing to continued improvement in the farmer's situation. The War Finance Corporation is steadily pouring aid from its billion dollar fund into agricultural communities to finance the farmer. Freight rate reductions on stock, grain, hay, etc., now going into effect, will save many millions for the farmers. Land values are now on a sound-

er basis. For 1922, better labor at lower cost will be available, better marketing conditions are being evolved, and recent tariff legislation also should tend to increase farm product prices.

All these factors indicate that more efficient production by modern methods and improved machines will mean greater profit for the new year. You cannot afford to postpone the purchase of needed machines. Where repairs have been made again and again, beyond the point of serviceability, waste and loss are pretty sure to follow. The present prices will enable you to replace the old with efficient modern machines so that best use may be made of the opportunities that are certain to come to the farming world.

The International Harvester Line of Farm Operating Equipment

Binders
Threshers
Harvester-Threshers
Headers
Push Binders
Mowers
Rakes
Tedders
Loaders
Side-Delivery Rakes
Sweep Rakes and Stackers
Combined Side Rake and Tedder
Baling Presses
Corn Planters
Listers
Corn Cultivators

Corn Binders
Corn Pickers
Corn Shellers
Ensilage Cutters
Huskers and Shredders
Huskers and Silo Fillers
Beet Seeders
Beet Cultivators
Beet Pullers
Cotton Planters
Grain Drills
Lime Sowers
Broadcast Seeders
Tractor Plows
Horse Plows
Disk Harrows

Spring-Tooth Harrows
Peg-Tooth Harrows
Tractor Harrows
One-Horse Cultivators
Culti-Packers
Kerosene Engines
Tractors
Motor Trucks
Cream Separators
Manure Spreaders
Stalk Cutters
Feed Grinders
Stone Burr Mills
Cane Mills
Potato Diggers
Wagons

If you are interested in learning some of the new prices or in looking over any individual machine, the International Dealer in your vicinity is at your service. Or you may address your inquiry direct to us.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA USA
(INCORPORATED)

92 Branches and 1,000 Dealers in the United States

Boxed Apple Situation in Review

By W. F. GWIN

President Northwest Fruit Exchange

Here is presented a comprehensive review of conditions and developments of the current apple season of the Northwest, now drawing to a close, as given in an address by Mr. Gwin at the Pacific Northwest Fruit Exposition in Seattle in November. The analysis brings out points of importance to all northwestern growers and shippers, some of which are not always taken into consideration. The article helps to point the way to more effective marketing methods for the future and is worth study from this standpoint alone. Facts of the situation are set down without coloring, the unfavorable with the favorable developments. As a whole they must inspire a certain optimism and no little satisfaction over the season's results.

THE proverb that "It is an ill wind that blows no one good" was never better exemplified than this year, in connection with the northwestern boxed apple industry.

About Easter time last spring, a series of very severe freezes swept a wide range of territory through the Middle West and Middle and North Atlantic states. Damage to the blossoming apple crops of the big producing regions of Missouri, Arkansas, Virginia, Pennsylvania, New York, Michigan and other states of lesser importance from an apple producing standpoint was exceedingly severe. Otherwise, the

story of the northwestern boxed apple for the year might be written in more dolorous terms.

The states of Washington, Oregon, Idaho and Montana, taken together, the last season produced the largest apple crop in their history. General business conditions, as everyone knows, have been the most adverse in a long term of years. Manufacturing plants all over the country have, in most cases, been closed down entirely or working on part time. Millions of workers are walking the streets looking for work, and all classes of people are economizing.

Northwestern boxed apples find their way into consumption to an overwhelming extent via the route of the fruit stand. Their principal consumer is the man in the street. To a great extent they are eaten out of hand; only to a minor extent are they sold from grocery stores and used for general household and culinary purposes. Therefore the demand for them is acutely affected by unfavorable conditions in the great manufacturing industries, as the best consumers of northwestern apples are the highly paid mechanic classes.

Beginning with the copious rains which fell in the producing districts of the Northwest early in the fall of 1920, growing conditions were ideal. The result was that there came to maturity not only the largest crops the Northwest has ever produced, but perhaps one of the best from the standpoint of color, finish and general merchantability. Labor was plentiful and, while labor costs have not been deflated as fully in this industry as in many of the producing industries in the east, produc-

tion costs, taken altogether, have shown very satisfactory readjustment.

Before an examiner of the Interstate Commerce Commission in Yakima last winter, testimony was taken from a large number of competent witnesses as to the total cost on board cars, of the apple crop of the season of 1920. One of the most competent of these witnesses testified that it had cost \$2.28 per box to produce the 1920 crop and deliver it on board cars. Others gave figures, some higher and some slightly lower, but it is safe to say that the average producing cost last year was perhaps somewhere between \$2 and \$2.25. What the actual cost will prove to be for 1921 is yet undetermined, but it should not exceed 50 per cent of last year's cost.

It was apparent long before the crop was ready to harvest that the marketing of the 1921 crop would be characterized by a marked absence of speculative or storage activity. Up to this year it has been estimated that from 75 to 85 per cent of the entire commercial crop of the Pacific

Oil Spraying

should be done with ORTHO OIL EMULSIONS. So thoroly emulsified that it mixes readily with hard water and remains perfectly emulsified.

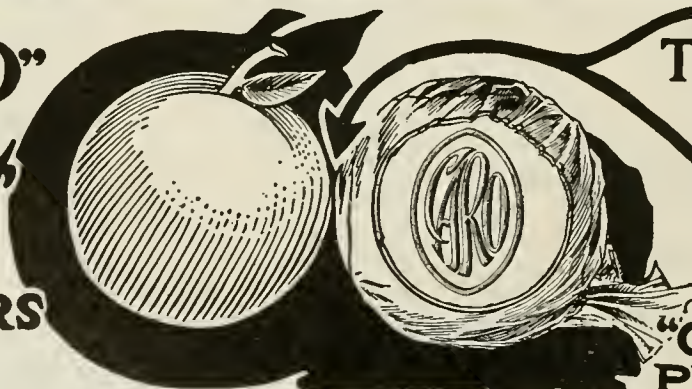
Write for Ortho Circular

CALIFORNIA SPRAY-CHEMICAL
COMPANY
WATSONVILLE, CALIF.



Address Dept. F

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Northwest found its way into cold storage at terminal or transit points either for a long or short term.

CONDITIONS in 1921 were adverse to storage operations by the trade on the usual scale. The situation was unsettled, commodity prices were exceedingly uneven, and the value of every kind of commodity subject to unusual fluctuation. Hence it was manifestly necessary that unusual preparations be made by the producers and their sales agencies to effect an even wider and thinner distribution of this large crop over the markets of the world than had ever been achieved in previous years. It is one thing to have trainloads of apples arrive in the big centers sold and destined for cold storage and quite another thing to have similar or even greater quantities (as this season) arrive on those same markets unsold and at the mercy of the open market. This year, then, the value of strong growers' organizations and marketing agencies has been demonstrated and emphasized in a very much stronger, more impressive manner than ever before, especially during the years of the war and the period following the Armistice. This year it was a case of the product seeking the market and in the most aggressive manner. Growers have prospered in direct proportion to the skill and salesmanship at their command.

Despite the favorable factors touched upon, conditions have not been unmixed with very serious and adverse factors. The railroad companies, fully apprised of the unusual size of the 1921 crop, nevertheless felt confident of their ability to furnish enough refrigerator cars to move it to market as rapidly as it was ready. Assurances to this effect were given growers and shippers by all lines serving the territory. Reliance was placed in these assurances and it came, therefore, in the nature of a staggering blow when almost without previous warning the car supply fell far short of requirements during the latter part of September. The harvest was on in full blast and the situation was aggravated by the unprecedentedly early date on which the shortage arrived. In previous years the supply was usually fully adequate up to the middle of October.

Occurring when it did this year, the shortage resulted in almost immediately overflowing the packing houses and warehouses. Packing schedules were upset and the movement of the crop to market seriously delayed, with the result that the industry has sustained losses no doubt running into the millions of dollars, due to the rapid ripening of certain of the early and intermediate varieties for which during a period of several weeks no transportation was available.

Despite the fact that several of the best organized and most experienced marketing agencies have broken all records this

(Continued on page 25)

For your Dormant Spray

DORMOIL

Especially for Leaf Roller, Scale, Aphis, Blister Mite, Red Spider, etc.

DORMOIL has been used with remarkable success in Oregon, Washington and Montana. Write for details

HOOD RIVER SPRAY CO.

Hood River, Oregon

Figure the Profit in Dollars

Between big, perfect, sound apples—
And knotted, dwarfed, unmarketable fruit,
the kind caused by aphis injury.

Yet by the use of 10 cents' to 15 cents' worth
of

Black Leaf 40

Nicotine Sulphate

per tree, you can control Aphis, Thrips, Leaf Hopper and other soft-bodied, sucking insects on your fruit trees. Just picture the difference in your own orchard between a yield of sound fruit and a crop of knotted and dwarfed "Aphis apples."

Why, a mere handful of these culls will cost you more than the quantity of Black Leaf 40 required per tree. Black Leaf 40 has for many years been the "true and tried" protector of the crops of the progressive growers of the United States and Canada against these insect pests that are so destructive to your orchard profits.

Send for copies of complete spray chart leaflet and bulletins, with name of nearest Black Leaf 40 dealer.

**TOBACCO BY-PRODUCTS AND
CHEMICAL CORPORATION**

(Incorporated)

Louisville, Kentucky

Elemental Treatise on Pruning the Apple

Prepared by STAFF WRITER

Here is the continuation of the thorough-going discussion of pruning, its objectives and principles, begun in the December issue. This installment resumes the discussion of proper methods of forming the tree head, not fully completed last month. From here the subject is pursued in logical sequence, practices for pruning at the various successive stages in the life of the tree being given.

(Continued)

IN formation of the open-headed tree, through pruning operations of the first two years, it is very important to avoid the one weak point of this type. This is in the crotch, which must be made as strong as it is possible to make it.

Formation of the head between the heights of fifteen and thirty-five inches, as here suggested, solves the problem of weak crotch. It permits the branches to start more horizontally without seriously interfering with cultivation and gives better distribution, prime factors in producing a strong crotch.

Two Years to Form the Head—The habit of growth makes it impossible to form the head with a proper distribution of branches in one year. The growth usually occurs at the top, due to a congestion of sap and the upper buds being stronger. To cut at thirty-five inches would probably result in a few shoots at the top while the lower buds would only develop leaves or remain dormant, producing little or no growth from which to select the lower scaffold branches. It would only be under the most favorable conditions that the newly planted tree would be able to force sufficient growth along its entire stem from fifteen to thirty-five inches to make the proper selection of the lower scaffold branches possible. Therefore, two years are necessary in properly distributing and forming the scaffold branches.

Cut to Twenty-Five Inches When Planted—The first year head the tree at twenty-five inches. This will probably force most of the buds between fifteen and twenty-five inches into growth. The top shoot, which is usually almost vertical, is left about ten or twelve inches long, cutting it at thirty-five inches from the ground. The other laterals are stubbed back to one or two buds. This top shoot forms a continuation of the trunk and the following season, lateral growth will be thrown out from it as well as the stubs and dormant buds on the old stem. Thus at the end of the second

season there will be numerous laterals along the entire stem, making it possible to select four, properly spaced between fifteen and thirty-five inches to form the scaffold branches.

A study of habits of growth will show the practicability of this system. All branches grow toward the best light conditions. The top shoot usually grows almost vertical. Lower branches tend to keep away from the shading influences of the branches above by growing more horizontal. Thus the upper

shoot usually lends itself admirably as a leader. Should it be too horizontal cut it short to an upper bud which the following year will form a leader.

How does the growth start? The greater part of the root system has been removed and not a single feeder is left. New root feeders must be produced before the tree can draw nourishment from the soil. This calls for the reserve energies of the tree; elaborated food stored in the tissues of the stem and roots. When the leaves begin to

Diamond Quality SEEDS
produce Vegetables that you'll be proud of

Tested with the utmost care and proven by actual field tests of commercial growers—they are the best for the Northwest.

FREE 1922 CATALOG
Our Annual Catalog and Buyers' Guide is now ready. Write for your copy now.

PORTLAND SEED CO.
PORTLAND, OREGON

Diamond Quality SEED COMPANY

push out, the reserve food and moisture is used until the root feeders can be formed to supply more. This will explain how newly planted trees may start into growth with apparent vigor, only to die later when the reserve food and moisture is exhausted. By cutting back the top further and thus reducing the number of buds, this supply is conserved and thus the tree is tided over the critical time until the root feeders are formed.

The heavier cutting back to twenty-five inches will also stimulate a more vigorous face. This is of prime importance in aiding the tree to resist the attacks of borers growth by reducing the tissue building sur- and to heal its wounds received in cultivation.

The severe stubbing back of the branches after the first season's growth will stimulate a very vigorous growth the following year, forcing more buds into growth to produce more laterals along the main stem from which a better selection of scaffold branches can be made.

FIRST Year—As has already been said this pruning is largely stubbing back. Remove all growth below fifteen inches and leave the upper shoot to a height of thirty-five inches as a leader. Generally two buds are left per stub, not for the purpose of getting two shoots, but to insure the growth of at least one. In fact, only one is desired from each stub. Some may question the advisability of stubbing back good strong shoots which are apparently well located for the lower scaffold branches. Why not leave these fourteen or sixteen inches long, removing the others and growing the upper scaffold branches from the leader the following season? The reasons are: First, to cut back reduces the number of buds and increases the vigor, thus insuring a growth from all the buds on the leader and stubs so that the best possible selection can be made. Second, they might be poorly located with reference to those scaffold branches produced the following year. Third, they would have the lead and might tend to draw too heavily on the sap supply and stunt the younger upper branches. Stub back and give each lateral an equal start. If the tree has made a heavy growth the stubs may be left six or eight inches if by so doing sufficient wood is removed to stimulate a growth from every bud left.

Some orchardists practice stripping off the leaves in the spring below fifteen inches on the trunk to force stronger growth into the shoots above. This is not advisable. There being no object where stubbing back is practiced, and the first year every leaf should be left to encourage growth and root development, and to aid in the protection against sunscald. However, where screening is necessary for protection against borers, rabbits, squirrels or sunscald the lower buds are rubbed off.

Second Year Pruning—This is the most

important pruning. The future of the tree, its strength and efficiency, rests largely with the proper choice of scaffold branches. It is far more important to have them issue at different levels than to balance the tree by growing from opposite sides. Their growth will occupy the vacancies later, but their position on the trunk never changes. Remove all growth except the selected laterals which are headed back in accordance with

the vigor and growth of the tree, leaving them twelve to eighteen inches long. If the tree has made a weak, insufficient growth not permitting a good selection, stub back as before.

By cutting to certain buds one can influence the direction of the growth. The last buds tend to grow in the general direc-

(Continued on page 20)

ALGEMEENE VRUCHTEN IMPORT MAATSCHAPPY

(General Fruit Import Company)

Amsterdam, Rotterdam, Cologne

head-office Amsterdam, Tel. adr. "Alvrima"

Capital Florins 3,000,000—

We solicit kindly consignments
of apples.

References:

Irving National Bank, New York
Guaranty Trust Company, New York.

Roseburg Man Doubles Yield of Prune Orchard

Frank Brown of Roseburg, Oregon, dried $4\frac{1}{2}$ tons of prunes from an acre and a half of orchard. This was more than double his usual yield and was due to the fact that he used

Nitrate of Soda

Eighty per cent of the successful prune growers and loganberry growers of Oregon and Washington use Nitrate of Soda.

Loganberries need Nitrogen

Carl Aspinwall of Gervais, Oregon, from eight acres, harvested this year 43 tons of loganberries. He used 400 pounds of Nitrate of Soda and 250 pounds of Super-Phosphate, per acre. Chemical and field tests by experts of our Agricultural colleges and progressive growers show that nitrogen is the one element our soils need—that the application of Nitrate of Soda produces vigor, increases yields, and gives large specimens of fruit. Nitrate of Soda is the quickest available and most economical form in which to buy nitrogen—15 per cent nitrogen equals 18 per cent ammonia.

Order early. Write or wire

THE NITRATE AGENCIES

805 Hoge Building

Seattle, Washington

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York
JNO. D. ROSS.....608 Otis Bldg., Chicago

SAN FRANCISCO REPRESENTATIVE

EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance.
Canada and Foreign, including postage, \$2.00,
payable in American exchange.
Advertising Rates on Application.

For Prosperity

This journal is not and never will be made a land-boosting, project-promoting organ. It has both a definite field and a well-defined policy. It will zealously stick to both.

In the face of the great need of the Pacific Northwest for more people on its lands, as amply set forth in this issue, it appealed to us as a real duty to do our bit toward inviting the dissatisfied and restless residents of eastern states to give our fruit sections the consideration they merit. With this object in view, publication of this Homeseekers' Number was conceived.

The number might be larger; it might be better, but we would do nothing to make it lurid or misleading. If you think the idea has been a good one will you not tell us so? If you think it might well have place as an annual feature we should like to know that.

It is our hope that many extra copies will be sent to the eastern friends and old acquaintances, to carry the message and the invitation of the Northwest to them.

Meanwhile, our energies are fo-

cused on the ambition to do all we can toward making the year 1922 the best and most prosperous ever enjoyed by the fruit industry of the Northwest.

Bringing in Settlers

There is evidence that the automobile is to do more than any other agency toward locating new settlers in the Pacific Northwest. The way this comes about is all very simple.

Touring by motor has become a great national avocation. The touring range has rapidly widened until now it is no uncommon sight for the northwestern rancher to see a car bearing a New Jersey, or Massachusetts, or Texas license spin by his front door. In the season just closed this section has seen a continuous procession of motor parties from the Middle West, South and East.

Random figures from the Portland municipal auto camp will serve to illustrate. From Massachusetts the camp registered 16 cars, from New York, 55; Maine, 2; Virginia, 6; Florida, 15; Texas, 62; Illinois, 102; Nebraska, 85. The total of registrations to October 1 was 5,700 cars.

The point of particular interest is the fact that fully 15 per cent of these tourists actually located here in the Northwest, according to estimate of the camp attaches, who talked with them. For these tourists this was the end of a quest for a new home. They had sold out in their old location and jaunted forth in the dear old family car in search of a more pleasing home. Here they found it, and here they have settled down.

Fifteen per cent of 5,700 is 855. We have reason, then, to believe that the automobile brought through this one camp 855 families as new settlers for the Northwest. It brought, of course, other hundreds of families through other points.

There is ample justification for applauding the good work of the faithful flivver and trusty touring car—and hoping that double the number will head this way next season.

Land Frauds

Officials in Michigan have discovered that much worthless land in that state has been sold to prospective farmers on representations by real estate firms that the land was ideal for fruit growing or potato culture. So extensive have become the activities of such land sharks that state and federal representatives held a meeting to counter fraudulent work, it was arranged to consider the matter.

States of the Pacific Northwest are plainly much ahead of Michigan in the matter of protection for settlers purchasing lands. There are several factors here that assure the buyer of land, raw or developed, against fraud.

To pass over the fact that there are mighty few areas where may be found worthless land that would deceive any but the simple minded, there are other safeguards. It is a fact, for instance, that crooks have been weeded out of the ranks of real estate dealers here. This is no mere idle boast.

Consider the laws of Oregon. They require all real estate dealers to operate under a license and under bond. One mis-step for any dealer in the state would not merely mean that he would immediately be put out of business by revocation of his license, but there remains full opportunity for recovery by suit on his bond. This is typical of the way northwestern states have banished crooked land operators.

Other protective factors include the numerous soil surveys, already completed and published, and the services of the agricultural colleges in making free tests of soil samples submitted to them. Again, public sentiment out here some years ago became a barrier against misrepresentation. The prospective purchaser may easily learn the truth about lands under consideration by merely asking the judgment of nearby ranchers.

There are few sections of the United States where the buyer with intelligence enough to observe and ask questions, is more certain of getting real value for the money he invests than here.

Development Problem of Oregon

By GEORGE QUAYLE

Secretary Oregon Land Settlement Commission

It becomes evident to the reader at once that Secretary Quayle has no hesitancy in telling Oregon's lack of population and giving intimation of what this lack means. Surely abundant facts are presented to show that there is nothing inherently wrong with the state or its lands as the cause of slow development. The potential agricultural and horticultural wealth is here, he shows, the trouble being that not enough people have yet discovered the fact.

THE same opportunities which brought the first pioneers across trackless wilderness in search of a land of fertile valleys, rich plains, mild climate and "plenty of elbow room," are present in Oregon today, comparatively speaking. And it is a strange paradox that this state, which is admittedly of the first rank in wealth of potential agricultural resources, has been surpassed by neighboring states in the growth of rural population.

The population of Oregon is given in the 1920 census as 783,285, or 8.28 to the square mile. Compared to the average density of population throughout the United States, 35.5 persons per square mile, or, more specifically, to the neighboring states,—California, with its 22 per square mile, and Washington, with 20.3,—it is evident that Oregon is capable of tremendous expansion in rural population.

The ratio of cultivated to uncultivated lands in this state may be given in a nutshell. It is estimated that there is 23,000,000 acres of land suitable for cultivation in Oregon, of which 3,200,000 acres, or less than one-seventh is actually producing crops.

Government reports are proof of the fact that the fertility of the soil is unsurpassed. Oregon wheat last year ranked third in the United States in yield per acre; Oregon apples and western Oregon walnuts and prunes hold rank with the best in the markets of the world; nine-tenths of the world's supply of loganberries is raised in western Oregon.

In eastern, southern and southeastern parts of the state, large areas of arid and semi-arid lands are being brought under cultivation by the building of great irrigation projects. These irrigated lands are admirably suited to the production of a wide range of agricultural and horticultural products. Central Oregon potatoes, grown on irrigated lands, have already established an enviable reputation.

At the present time there are 1,250,000 acres included in irrigation projects com-

pleted or under construction and it is estimated that there is at least an additional 1,000,000 acres capable of irrigation in the future.

In western Oregon, and particularly in the Willamette Valley, is found a combination of soil and climate that is most ideal for fruit growers, the dairy man, the poultry man and the gardener. A moist, mild climate, combined with a natural richness of the soil, makes this section highly inviting to the settler.

While the Willamette Valley is the most thickly settled portion of the state, there is room for a far greater development in the future. It is estimated that there are more than 800,000 acres of cut-over lands suitable for agriculture, the bulk of which is found in the foothills bordering on the Willamette Valley and in the coast hills.

These cut-over lands represent one of the richest agricultural assets of the state as yet undeveloped. While the clearing of these lands is a hard and expensive task, it is expected that the development of logged-off lands will be greatly facilitated through the operation of the Logged-off Land Bill which was passed at the last regular session of the state legislature.

For the purpose of demonstrating to the settler what may be done on a one-man farm, the Oregon Legislature, in its 1919 session, created a commission known as the Oregon Land Settlement Commission, composed of five representative citizens, appointed by the governor, who serve without pay. It is the duty of this commission to establish for settlers in different parts of the state typical farms on which modern improvements will be made with the idea of reducing to a minimum the necessary farm work. The object sought is to create a highly improved one-man farm to be operated under ideal living conditions for the farmer and his family.

Three of these experimental farms have been established, one near Independence, one near Roseburg and one near Prineville. Two more units have been selected, located near Marshfield and Ontario. While three of the above projects are fully completed, the commission has decided to wait until the results of two or three seasons are obtained before using them as examples.

The commission has co-operated at all times with the Oregon Agricultural College in the furthering of this work, and it is expected that as soon as possible an official report will be ready for the prospective homeseekers as to exactly what may be expected from a one-man farm in the representative districts of the state.

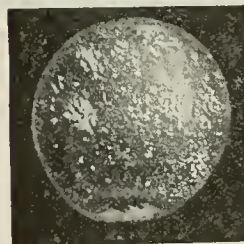
The National Orange Show will be held in San Bernadino, Cal., February 17-27.



ALBATROSS BRANDS

How to prevent the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in spots—or blotchs. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.



Note the "blotch" or "burn" of the lead on this apple

The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

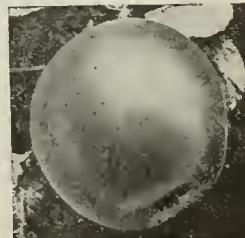
ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.

Directions sent with each order



Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. Bbl.	Boxes	1 lb. Pkgs.
20c lb.	22c lb.	25c lb.

Freight prepaid to Northwest points.

One pound spray spread is sufficient for 200-gallon tank.

NOTE: If you use Casein, Albatross Superfine is the brand to buy. Very finely ground—quickly soluble when mixed with alkali.



—for storage plants, packing sheds, etc.

During the last six years a very large proportion of the major industrial plants, warehouses, lumber mills and canneries (list on application) have been made "spick and span" with Albatross Cold Water Paint. This paint is very economical to use—drys snow white—will NOT peel or rub off—retards fire—easy to apply—and when properly applied, reduces insurance rates. Has remarkable spreading and covering qualities—will work over wood, rock, plaster or other material. For almost any kind of commercial interior, Albatross Cold Water Paint is unequalled. Extensively used in the fruit world for storage plants, packing sheds, etc. Tell us your requirements—we can meet them to your complete satisfaction. * * * General Basic Products Co., Sole Manufacturers, 4706 Marginal Way, Seattle, U.S.A. Dealers. Address us for attractive sales proposition.

Fruit Growers! Get results from your spray!



Professor A. L. Lovett, the eminent entomologist of Oregon Agricultural College, in speaking of Casein as a spreader, says: "It has an advantage in cheapness, availability, compatibility in most spray combinations, and in ease of preparation. For these reasons it was given first rank in our subsequent tests and experiments."

BUL. 169 ORE. AGR. COLLEGE.

KAYSO—our new combined casein spreader and adhesive—solves the problem of perfect spread—makes the spray stick on every infected spot even in the winter rainy season.

KAYSO should be added to Lime-Sulphur and Bordeaux mixtures. It is used easily with all spray mixtures.

KAYSO makes the spray cover every part of the tree evenly.

KAYSO insures sticking in rainy season.

KAYSO does not cause burning or toxicity.

KAYSO is easy to mix—requires no cooking. You sift it slowly into the spray tank while the agitator is running.

KAYSO costs less than other spreaders—and it spreads the spray over more trees.

KAYSO is 100% efficient because it is manufactured from the highest grade casein, which is finely pulverized and completely soluble.

Ask your dealer, or send this coupon and 40 cents and we will mail you, prepaid, a sample package sufficient to mix 200 gallons of spray.

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY STREET
SAN FRANCISCO

Enclosed please find 40 cents, for which mail me sample package KAYSO.

Name _____

Street _____

City _____ State _____

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY STREET
SAN FRANCISCO

277 BROADWAY
NEW YORK

740 TERMINAL STREET
LOS ANGELES

Improvement in Orchard Management

(Continued from page 9)

regularity to maintain uniform soil moisture. Again, an insufficient head of water permits waste near the flume and an insufficient supply to trees at the other end of the row.

Proper supervision of irrigation requires very frequent inspection of the factors mentioned. Group 1 (386 boxes), shows an average of 2.79 man-days per acre per season; Group 2 (257 boxes) 2.07 days; and Group 3 (186 boxes) 1.57 days. In other words, Group 1 spends 78 per cent more time each season supervising approximately the same number of irrigations than does Group 3. The same point of view is well illustrated under "Value per acre" classification. Group 1 spends 2.35 days per acre; Group 2, 1.99 days; Group 3, 1.51 days.

SPRAYING—Much progress has been made during the past few years in application of sprays, combinations, dilutions, and timeliness. This is reflected in higher percentages of extra fancy fruit. The most striking introduction has been the use of the spray gun in place of the long, cumbersome spray rod. Greater efficiency in the use of labor and material has resulted. During nearly the entire period covered by this survey the three and one-

half horse-power sprayer with two spray rods was used. The same machine has now been supplanted by the spray gun, or replaced by a larger machine, usually ten to fifteen horse-power, capable of furnishing two or three guns with a capacity of approximately fifteen gallons a minute.

Striking differences in the amount of spray material used by the different groups is brought out. Group 1 (yields) shows an average of 2015 diluted gallons to the acre annually; Group 2 1923 gallons; and Group 3 1381 gallons. On a tree basis this is 27.45, 27.21, and 20.26 gallons for each group, respectively. Under extra fancy, Group 1 shows 2181 gallons an acre, or 29.34 a tree; Group 2, 1653 an acre, or 23.56 gallons a tree; and Group 3, 1592 gallons an acre, or 24.0 a tree.

THINNING—Thinning is another fundamental orchard practice requiring thoroughness, timeliness, and good judgment. There are several aims which the grower usually has in mind when doing this work. One is, that such a practice tends to promote annual bearing. In other words, that removing fruit entirely on some spurs will tend to cause such spurs to fruit during the following year rather than to overbear one year, with little or no fruit the following year.

Data compiled at different experiment stations throws serious doubt upon this conclusion. On the other hand, some growers go to the other extreme in failing to prune enough. No set rule can be laid down which will cover all cases. Generally speaking, one may safely avoid heavy pruning while the trees are young and vigorous, especially thinning out. This would be true with yellow or green apples. Red apples would need at least a light thinning out.

One grower of Newtowns, fifteen years old, who had very large yields on a six year average, practically did no pruning on his trees between the ages of six and twelve years, with the exception of removing a few of the large lower limbs which interfered with cultivation. With a maximum fruit-spur system, and vigorous trees, very large yields have been secured. Such a plan has not, however, been without its disadvantages. Fruit spurs in the lower portion of the trees have become weakened through excessive shading and do not today function vigorously. Thus the tendency is for fruit wood to extend further and further out on the main limbs where it is less easily thinned, sprayed or propped.

This is a condition into which many of the older orchards have fallen—that of having long barren areas in the lower portion of the tree devoid of fruit spurs.

It is difficult, if not actually impossible, to restore such fruiting wood in the area mentioned, chiefly because any rational plan of pruning is too far removed from the area to be influenced. Usually heavy pruning removes practically all new, thrifty bearing wood and promotes an excess of suckers which, in turn, do not come into fruiting, or may produce a few weak spurs after possibly several years of waiting.

The more nearly the grower approaches annual pruning the more satisfactory and uniform are the results. Group 1 (yields) averages 78 per cent of the orchard annually pruned; whereas, Group 3, averages only 48.7 per cent.

From the foregoing data the possibilities in the apple business are established. Marked differences in the performance records of one orchard as compared with another are brought out. These differences are associated with different methods of management. Chief among these is the matter of variety, age of trees, acreage, irrigation, pruning and spraying.

KAYSO DEALERS

OREGON

PORTLAND
Ariss Campbell & Gault, 12 Front St.
Hardie Mfg. Co., 55 North Front St.
Portland Seed Co.

SALEM
D. A. White & Son
Oregon Growers' Co-operative Assn.

DALLAS
Guy Brothers Hardware Co.

EUGENE
Eugene Fruit Growers' Assn.

SUTHERLIN
McKay Brothers

MEDFORD
Monarch Seed & Feed Co.
Farm Bureau Co-operative Exchange

ASHLAND
Ashland Fruit Growers' Assn.

ROSEBURG
Churchill Hardware Co.

CORVALLIS
Brownsville Canning Co.

COTTAGE GROVE
Knowles & Graber

ALBANY
Murphy Seed Co.

HOOD RIVER
Dan Wuille & Company

WASHINGTON

SEATTLE
Farrell, Boswell & Co., Hoge Building
J. W. Dunn & Co.
Woodruff-Boyce Seed Co.

VANCOUVER
Red Ash Seed Co.

WALLA WALLA
California Spray Co., Keylor Grande
Theatre Building

WENATCHEE
Wells & Wade

ZILLAH
Harlan Fruit Co.

IDAHO

TWIN FALLS
Darrow Bros. & Co.

TASTES LIKE A DATE

Fruit Grows Uniformly Large. Sugar Content 50 Per Cent When Dried. A Delicious Confection; Prolific; Profitable. ORCHARDS BEING DEVELOPED ON A SPECIAL PLAN. Write for Details and Literature.

ORDER Your Trees Now

Delivered by Freight, Express, Mail.

THE DATE PRUNE

Coates 418 TRADE MARK REG. U.S.A.

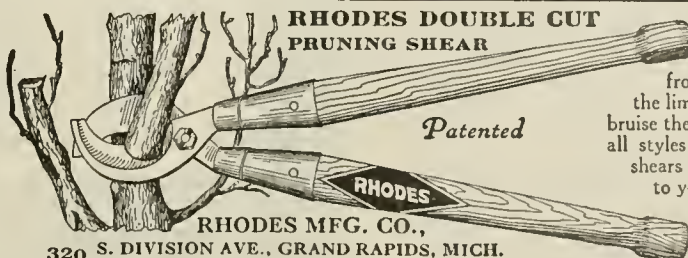
Address all letters to Dept.

Send 15 cents for Sample Box

Propagating Rights Controlled.

OREGON NURSERY COMPANY

ORENCO. OREGON



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.

Elemental Treatise on Pruning

(Continued from page 15)

tion of the branch, while the lower buds make a more lateral growth. The last buds usually make the strongest and most desirable growth. With young trees it is generally necessary to encourage spreading growth. This may be done by cutting to an outside bud, or if much spread is desired, leave the next bud above in order to encourage a more horizontal growth from the bud chosen. Cut to laterals in preference to buds if suitably placed.

Third Year—The amount of wood to leave or remove depends entirely on the vigor of the tree. If a strong growth has been made three laterals eighteen to twenty-four inches in length may be left on each scaffold branch. If the growth has been small and weak, leave only one or two twelve to fifteen inches in length.

In making the selection choose branches making an outward spreading growth, allowing no two to issue near the same point, cross, or occupy the same light and air space. Upward growth may be encouraged from now on if the branches have attained sufficient spread.

Fourth Year—The frame work of the tree has been formed and from now on the pruning is largely a process of heading back and thinning out, cutting as little as possible. Light summer tipping is conducive to fruitfulness. Remove crossed, diseased, and superfluous branches, keeping the head more or less open to the light. Heading in will tend to keep the tree within bounds and encourage the more fruitful lateral growth.

TIME to Prune—There is a general tendency for orchardists to disregard the needs of the tree and prune entirely in winter. This is probably due to the facts that in winter labor is more plentiful and cheaper and the orchardist has more time. Pruning also is more easily accomplished when the leaves are off, as the pruner can readily choose the branches to cut.

Pruning may safely be done under certain circumstances at any time of the year. The proverb, "Prune in winter for wood and in summer for fruit," explains the different physiological effects of pruning at the different seasons.

Winter Pruning—Removing wood during the dormant season inspires wood growth. The heavier the pruning the more growth will result. The reason is obvious. The removal of wood during dormancy reduces the surface over which to expend the redundant energy, giving a proportionately greater food supply for the remaining branches.

Winter pruning is practical where wood growth or vigor is desired; as on young trees, stunted or weak growing trees, varieties which tend to over bear, or where the soil is light and dry causing much small fruit and little wood growth.

Pruning may be done at any time during the dormant season but preferably just previous to the beginning of growth. If done in the fall or early winter the wounds are subjected to a long season of drying before the process of healing begins. Avoid pruning when the branches are frozen, as they will crack, dry out, and die back.

Summer Pruning—The prime purpose of summer pruning is to incite fruitfulness. It is used to check the rampant growth and hasten the period of profitable bearing of young trees and to check the wood growth and increase fruitfulness on vigorous growing, tardy or shy-bearing varieties and trees located on rich, heavy moist soils.

The physiological reasons for these effects are not fully understood, but generally supposed to be due to its weakening effects on the plant. All plants become fruitful when starved or made to suffer. Girdle a tree during the summer and it will ripen its fruit prematurely in one last effort to reproduce its kind. The removal of leaf surface reduces the manufacturing or elaborating of food, thus tending to starve and weaken the plant. This not only reduces the growth in the stems, giving immediate results, but also retards the extension of the roots, making the results more permanent. The vigor of the roots is largely determined by the amount and vigor of the top. On the other hand the removal of wood during the growing season has a stimulating effect similar to winter pruning by reducing the surface of growing tissue over which to distribute the elaborated food.

Summer pruning has both stimulating and weakening effects. The greater fruitfulness is encouraged by securing the greater weakening or starving effect with a proportionately less stimulating effect. In other words, where the stimulating effect is greater than the weakening effect it defeats the end; it stimulates a wood growth instead of inciting fruitfulness. Therefore the efficiency of summer pruning rests

largely with the ability to remove a large leaf surface with a proportionately small amount of wood. Tipping and pinching back of the current year's growth gives the best results.

SERVICE
IS OUR FIRST N-AIM

PERFECT
FRUIT LABELS

THE
SIMPSON & DOELLER
CO.
1425-24 N.W. BANK BLDG.
PORTLAND, OREGON.

**GET OUR SAMPLES
AND PRICES**

**WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.**

GRASSELLI

Backed By 83 Years Experience

*Now is the
time to
order your*
**ARSENATE
OF LEAD**

WHEN spraying, you can't afford to take any chances with the materials you use—not even a single element of risk. And there is not the slightest need to gamble. If you will see to it that the name GRASSELLI is on the Insecticides or Fungicides you buy, you eliminate every uncertainty as to Quality and Uniformity—our 83 years of chemical leadership is your warranty.

Tie up to GRASSELLI and Security!

Established 1839

Arsenate of Lead Calcium Arsenate
Bordeaux Mixture

THE GRASSELLI CHEMICAL CO., CLEVELAND

Farm Fruit Storage

WE ARE interested in knowing how extensively our readers, as representative fruit growers of the country, are provided with suitable storage structures on the farm. By suitable storage structures we mean those designed and built particularly with the thought in mind of providing the best possible storage facilities for fruits under all weather conditions.

Commercial fruit growers, whether private shippers or members of associations, know the vital necessity for adequate storage facilities on the ranch. The unprecedented early freeze of two years ago cost many growers much more than proper frost-proof storage space would have cost them.

What are you planning in this regard? Tell us your experience in providing your own storage for your crops. What

kind of a structure have you and what were the materials used? Has it been built particularly with permanence in mind?

We want pictures of structures of this kind. Those which we can use will be paid for at a fair price. Don't hesitate to write to us at length about your structure and how you use it.

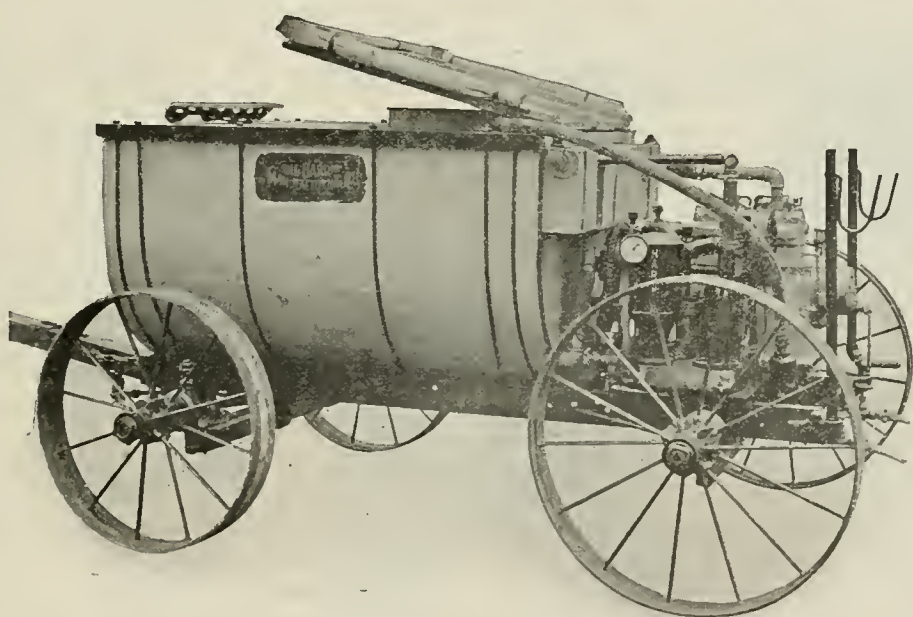
Orchardists intending to sow grass and cover-crop seed may make a serious mistake by not forwarding samples to their agricultural college for free tests as to purity. Illustrating the worthless character of some of these commercial seeds was a test recently made by the farm crops department of the Oregon Agricultural College. A sample of commercial Kentucky bluegrass seed, sent in for testing, was found to contain 82 per cent chaff and only 17 per cent pure seed.

A PERFECTLY formed pear weighing 2 1-2 pounds and said to have been grown on a tree 73 years old, was recently exhibited by John Dreith, of Visalia, Cal.

VALUE RECEIVED
Edmonds, Wash., Nov. 7, 1921
 BETTER FRUIT PUBLISHING Co.,
 Portland, Oregon.
Gentlemen: Please find enclosed \$1 for my next year's subscription. I like your magazine and consider my dollar well spent.
 Yours Respectfully,
 L. S. KEETON.
 President North Edmonds Growers' Association.

FITS EVERY SPRAYING NEED

Capacity
14-15 gals.
per Minute



Working
pressure
300 lbs.

The HARDIE MOGUL TRIPLEX

Here is high pressure and large capacity in a sound, practical design.

You will choose this machine if you measure the value of a sprayer by the cost of spraying results.

It is built to do successful, effective spraying in any orchard under the hardest of spraying conditions.

A 300-gallon tank MOGUL is but 8 feet long with top of tank but 57 1/2 inches from the ground. It weighs but 2150 pounds, and this

weight is equally distributed on all four wheels, giving you an ease of traction and turning that your team will appreciate.

The Mogul triplex pump, built the Hardie way, gives you high pressure, large capacity spraying hour after hour and day after day.

A four-cylinder auto type engine with Bosch magneto ignition, provides ample power in its most reliable form.

Here is your chance to get the greatest sprayer value known. Write for prices and catalog.

THE HARDIE MFG. CO.

55 N. Front Street

Portland, Oregon

Some Reliable Northwest Nurserymen

Blight-Proof SURPRISE PEAR ON JAPAN PEAR ROOT

Tests made in every conceivable way in the experimental blocks along side of and at the same time with all leading varieties of pears have proven the impossibility of spreading pear blight more than a trifling distance beyond the point of inoculation.

Plant the blight-proof Surprise and insure against loss. The second year top-work to Bartlett, Bosc, or any desired variety and you have the most blight resistant trunk and framework yet developed. This method is endorsed by leading horticultural experts after extensive experiments. Thousands of these trees have been planted the last few years in California, Southern Oregon, and in Washington. Our buds were secured direct from Prof. Reimer of the Southern Oregon Experiment Station, Talent, Oregon.

In our four hundred-acre nursery located on clean new soil of the Yakima Indian Reservation we grow a complete assortment of commercial fruit trees and general nursery stock. Rich soil, a long growing season, moisture under control and perfect fall weather for maturing our stock enable us to produce and deliver nursery stock unsurpassed for vigor, thriftiness and root system.



WASHINGTON NURSERY CO.

TOPPENISH, WASHINGTON

Salesmen Everywhere—More Wanted

Why Not Order Now?

TREES

For Resetting or New Orchards

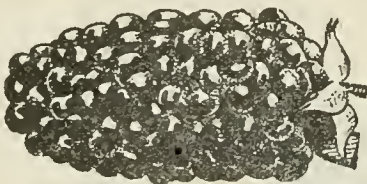
Our supply will take care of your needs and you will receive stock which is well grown and reliable.

Capital City
Nursery Company

426 Oregon Building
Salem, Oregon

WE NEED SALESMEN

CORY'S THORNLESS



MAMMOTH BLACKBERRY

The greatest horticultural novelty of the century. Very large, early, sweet, coreless and almost seedless, with rampant growing vine which is absolutely thornless. Millions will be sold as fast as they can be propagated. Get your order in early for next season. Last spring I was deluged with orders which could not be filled and I can promise but a few thousand for the coming season. Price, 50 cents each, 3 for \$1.00; \$3.00 per dozen. Will be well packed and sent prepaid by parcel post to any address. Descriptive catalog free.

ISAAC F. TILLINGHAST

Seed and Plant Specialist
212 Podel Street Santa Rosa, California

Reliable Trees and Plants

We have a complete line of guaranteed nursery stock: apple, pear, cherry, peach, apricot, prune and nut trees, gooseberries, currants, etc., which we offer planters at very close prices. However, orders should be placed at once to get the best grades. Send us your want-list today.

Benedict Nursery Co.

185 East 87th St. N. Portland, Oregon



FILBERT TREES

I have a choice lot of filbert trees of approved varieties. The bulk of the nursery stock this year consists of Barcelona and White Aveline.

DR. J. H. WILKENS

Box 126 McMinnville, Oregon

FRUIT TREES NUT TREES PLANTS, ETC.

We offer a good line of Italian, French Improved, Double X and other prune trees, propagated from selected scions. Walnut grafted, Filberts, Apple, Pear, etc. Berries, Gooseberries, Currants, Plants, etc. We have something of interest for you; try our inexpensive selling system; send for Planters' List; 31 years in business.

Carlton Nursery Co.

GROW GRAPES

under contract. Ask for grape circular. Special prices on grapes, berries and asparagus for commercial planting. Sweet cherries, peaches, apricots at lowest market prices. All kinds of fruit and ornamental stock. We offer strictly first class stock and guarantee satisfaction.

Home Nursery Co.

RICHLAND WASHINGTON

WORTH PRICE AND "THEN SOME"

Yakima, December 8, 1921

BETTER FRUIT
Portland, Oregon.
Old Friend:

You don't have to advance my "sub" any to get me to renew. The "little old magazine" is worth all you ask for it, and then some. I am sending in a two years' subscription instead of one so I won't be bothering you for a spell.

Respectfully
(Signed) W. C. Hall
Yakima, Wash. R. 5 Bx. 73

Harvesting Profits From Walnuts

(Continued from page 6)

of course, one has suitable land, properly located:

"Planting a walnut grove is like taking out life insurance with this difference—if you have a twenty year policy you pay a certain amount each year for twenty years; if you plant a walnut grove you pay a certain amount in cultivation, work and capital invested, for 10 or 11 years. After this your trees will pay your yearly dues. In 20 years you will have a piece of property worth from \$1000 to \$1500 an acre.

"There is no surer investment, provided the trees have the best care. I know 10 or 12 years is a long wait, and this is one of the reasons this line of horticulture is not further advanced in this state; but, if we consider the long life of the tree, it is a short time after all. If only the people of this state would realize the opportunities of making money by the growing of walnuts, our hillsides would be one continuous walnut grove. The time is surely coming when the growing of walnuts will be one of the greatest assets the state has."

Such is the opinion of Mr. Trunk, after spending 15 years in the game. Readers will doubtless be interested in knowing something of the history of his operations and his observations, as to cultural methods.

For one thing, he urges good cultivation. It is imperative, he says, that the trees be not neglected the first seven or eight years.

Location of the grove is another important point. Some groves about Dundee, planted at too low an elevation, were ruined in the severe winter of 1919.

The record of Mr. Trunk's experience with walnut plantings may well be given in his own language, as reported to the 1920 annual session of the Oregon State Horticultural Society:

"At my home place, on the road between Dundee and Dayton, about 70 acres is adapted to the growing of walnuts. The remainder of the land lies from 25 to 50 feet too low. The trees on this lower land grow well, but the crop is not so sure. Every year there is a certain amount of danger of having nuts frosted either in the spring or fall, whereas, on the higher land, we have never had any damage and are certain of a full crop of nuts each year.

"AS MANY KNOW, one of the oldest and largest walnut groves in the state is at Dundee, planted by Thomas Prince. As my land and soil were similar to that of the Prince place, I decided to plant 10 acres. This was in 1906, when walnut growing was still an experiment here.

"Many started to plant when I did. Some became discouraged the first and second years, and the others fell by the wayside the following years. Today there are about a dozen of the old faithful growers left, and I respect these men who had the

staying quality to wait and see what the nut tree would really do in this state. We have proved that in this valley walnuts can be grown on a paying basis, and that they are better filled in and better flavored than in any other place on the face of the earth.

"Last year, (1919), we took from 26 acres of nut trees, averaging 11 years old, \$4200 worth of nuts, which is 16½ per cent on land valued at \$1000 an acre. Less than \$700 covered all expenses of cultivation, harvesting and drying. This year, (1920) on account of lower prices, our income will not be quite as large—only about 12½ per cent on a \$1000 per acre valuation.

"Please bear in mind that these trees are still very young. The life of the prune tree is about 35 years; that of a walnut tree about 250 years. So, when a nut tree is 50 years old, it is still in its childhood days."

Returns from the increased acreage of nuts Mr. Trunk had this past year will be about comparable to those of 1920. He has sold most of his grafted nuts at the gratifying price of \$700 a ton, or 35 cents a pound.

While he now has 38 acres of trees of bearing age, he has additional acreage

planted which will bring the total to 70 acres. In about 28 acres of the plantings, prune trees have been used as a filler.

This constant expansion of plantings and holdings bears the best of evidence as to Mr. Trunk's faith in the future of English walnut culture in this state.

AMERICAN GROWN FRUIT TREE STOCKS

Apple Seedlings, Straight or Branched. Also Pear Stocks from French and Japan Seed, American Plum, Mahaleb Cherry and Peach Seedlings in all Grades. Car Lots to Central Points.

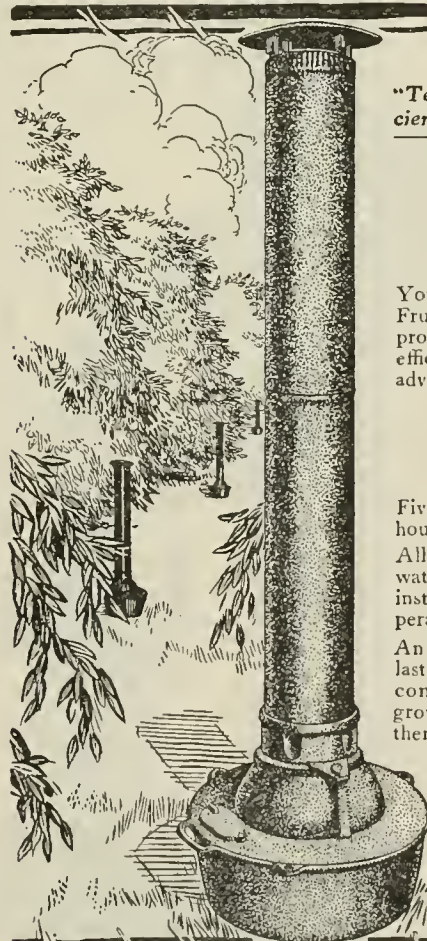
Foreign Grown Stocks

Apple, Pear, Mahaleb, Myrobolan, Quince, Manetti and Multiflora. All Grades. In Prime Condition. Can quote in France or out of Customs in New York or at Shenandoah, Iowa. Prices reasonable.

Remember our Complete Line of General Nursery Stock for Fall and Spring trade. We are now ready to do Business. Submit List of Wants for Prices to

SHENANDOAH NURSERIES

D. S. LAKE, President
SHENANDOAH, IOWA



"Tests on Oldsmar Heater show 100% Efficiency."—Prof. Peeples of Armour Institute

Frost Insurance at Minimum Cost

You insure your house, why not your crop? Fruit growers everywhere can have assured crop protection through the use of this improved and efficient heater which has a number of notable advantages over any other kind.

Oldsmar Frost Protector Costs Less To Operate

Five gallons of distillate fuel oil burns 10 to 15 hours according to temperature desired.

All cast iron (stack excepted), the Oldsmar is waterproof and cannot get out of order. Lighted instantly, it requires little attention and temperature regulation is positive.

An Oldsmar costs less than other cast iron heaters, lasts longer, requires fewer to the acre; affords complete protection — California and Florida grove owners and truck farmers are ordering them by thousands.

Write today for literature and full information about how the Oldsmar can protect your crop

Oldsmar Tractor Company
Oldsmar, Florida
Kell-Oil Heater Company
Coldwater, Michigan

O. V. BADLEY COMPANY

Distributors of Oldsmar Products

425 East Morrison Street

Portland, Oregon

Annual Meetings

A MOVEMENT seeking union of the horticultural associations of the states of Montana, Idaho, Washington and Oregon, was launched at Spokane last month, with Washington horticulturists taking the initiative. A call was issued that is expected to assure a conference of executives of the four associations at Spokane on January 21.

Outcome of the joint conference will be awaited with keen interest by fruit growers of the Northwest and others connected with the industry. Wrapped up in this proposal for a union of the state horticultural societies are potent possibilities. So many good things may be achieved by such an organization that it is to be hoped nothing may interfere with plans for its formation. A joint annual meeting, joint annual educational exhibit, united advertising for northwest apples, unified legislation—these are some of the more vital matters in which united action may bring far-reaching results.

The launching of this move for union of the state societies was, perhaps, the biggest thing accomplished at the annual meeting of the Washington State Horticultural Association and Fruit Growers' Conference, held at Spokane, December 12, 13 and 14. Action was taken more clearly defining apple grades and slightly modifying them in a few respects. On December 14, 15 and 16 Spokane entertained the annual convention of Northwest Potato Growers, at which a fine potato show was a feature.

On December 7 and 8, the annual meeting of the Idaho State Horticultural Association was held at Nampa. The sessions were well attended and papers and discussions brought out educational features of real benefit to those present.

In the election of officers, taking place near the close of the convention, these men were picked to head the association during 1922: J. P. Gray, president, Nampa; C. H. Sargent, vice-president, Fruitland; I. Lee Truax, secretary, Boise; A. E. Gipson, treasurer, Caldwell. The latter two men were accorded re-election.

The thirty-sixth annual sessions of the Oregon State Horticultural Society were held at Forest Grove, December 1, 2 and 3. Vegetable as well as fruit growers in goodly numbers were present. Each session was marked by helpful and informative talks, papers and discussions. Experts of both fruit growing and gardening industries were speakers.

These officers were elected for the ensuing year: D. W. Johnson, president, Corvallis; E. A. Rueter, vice-president, Forest Grove; C. D. Minton, secretary-treasurer, Forest Grove; Senator C. L. McNary, trustee.

Our readers may be assured that they will be given the cream of the papers and such matters coming before these meetings as have value to them.

Musical Merchandise	WE SAVE YOU MONEY! W. Martius Music House, Inc. 1009 First Avenue, Seattle, Washington Everything Known in Music	SHEET MUSIC
Write Us		Write Us

MYERS SPRAY PUMPS

**FOR SPRAYING, WHITEWASHING,
COLD WATER PAINTING
AND DISINFECTING**

FIG. 1690

FIG. 1862

FIG. 1521

FIG. 1736

FIG. 1518

FIG. 1795

FIG. 1726

FIG. 1823

FIG. 1984

For fast, thorough, economical spraying use MYERS SPRAY PUMPS. You may have but a few trees, vines or bushes—your garden may be but a small one—your orchard or vineyard may be of limited acreage—or you may be an extensive grower of fruits and vegetables with thousands of trees and plants under cultivation. It matters not which of these you are, or what your spraying needs may be, they can all be successfully filled with a proven and guaranteed MYERS BUCKET, BARREL or POWER SPRAY PUMP of such style, size and capacity as will, exactly meet your requirements.

Remember, much of the success of spraying depends on the spray pump—remember the quality of spray pumps differs just as it does in other implements. You can, no doubt, buy spray pumps at lower prices than asked for the MYERS, but in doing so you may be paying for light weight, under-sized, cheaply equipped pumps that will last but a short time and perhaps disappoint you with the results produced.

You take no chances of this nature when you purchase and use MYERS SPRAY PUMPS, NOZZLES and ACCESSORIES—regardless of style, size or equipment, Myers Spray Pumps are of a uniform standard, all being guaranteed for efficient and long time service if properly used and cared for. They throw a powerful penetrating spray, and are equally successful for whitewashing, painting, disinfecting and similar work.

It requires a 64 page Catalog to show the entire line of MYERS SPRAY PUMPS, AND SPRAYING ACCESSORIES, and the new edition for 1922 is just off the press. If interested in better spraying and better spray pumps, write us today for a free copy of this Catalog.

THE F. E. MYERS & BRO. Co. NO. 135 ORANGE ST.
ASHLAND, OHIO.
MANUFACTURERS OF
MYERS HONOR-BILT PUMPS FOR EVERY PURPOSE
HAY UNLOADING TOOLS, DOOR HANGERS ETC.

Pacific Northwest
Distributors *Mitchell* Spokane, Wash.
LEWIS & STAYER Co. Portland, Oregon
BUY FROM THE LOCAL MITCHELL DEALER

Boxed Apple Situation

(Continued from page 13)

year in effecting a most extraordinary distribution of northwestern apples and have sold and shipped fruit in carload lots to literally hundreds of markets which have never used boxed apples in car lots before, and despite herculean efforts to avoid congestion at gateways and large terminal markets, the fact remains that the pressure of supplies on nearly all of the larger markets during the last half of October and throughout the month of November was so great that prices declined in proportion to the degree of the pressure, and prices ruling in recent weeks have been 25c to 50c per box lower than opening prices at the beginning of the season.

The service of refrigerator steamships between Puget Sound and Columbia River points to Europe has been expanded by the addition of several lines and comparatively large quantities of fruit, particularly the varieties and sizes indicated in the foreign markets, have been exported.

BEFORE the Panama Canal route will afford substantial relief to the transportation difficulties of this industry, the following points will have to be worked out:

1—Sufficiently low freight rate to permit absorption of rail freight from initial producing points to Pacific seaboard, and absorption of short haul rates from Atlantic terminals inland for a reasonable distance.

2—Frequent and regular sailings.

3—Convenient terminals at Atlantic ports of discharge.

4—An arrangement whereby intercoastal steamers will stop in at a number of Atlantic and Gulf ports so as to effect at least a seaboard distribution of the cargoes.

It is still too early to show with certainty how the gross returns to the growers for their 1921 apples will compare with the returns a year ago. A few of the earlier varieties have been cleared and from these returns it would appear that the actual dollar returns to the growers this year per box of apples will average higher than last. As the cost of production of this year's crop is probably not over 50 per cent of last year, this means that the growers this year will make a reasonable profit on their apples, whereas last year, with few exceptions, the returns represented a loss under the actual cost of production.

The season has been very strikingly characterized by an unprecedentedly rapid liquidation of the crop. The Northwestern Fruit Exchange, with which the writer is connected, returned to its shippers during the month of October, \$801,773.11, which compares with \$311,348.70 during the same period in 1920. During the first 15 days of November, the same organization returned to the same group of shippers, sales proceeds amounting to \$814,-

158.52, making a total for the 6 weeks between October 1 to November 15, of \$1,-615,931.63.

This rapid flow of money back to the producing districts has resulted in extensive liquidation of bank loans and mercantile credits, at least on the part of those growers and growers' organizations that have pursued the same policy of speeding up the shipments and converting the crop into cash that has been followed by the organization referred to.

Practically all of the early and intermediate varieties of apples are far along to complete liquidation. This leaves yet to be sold only Winesaps and a few minor, hard, late-keeping varieties.

Inasmuch as the supplies of latekeeping, barreled apples produced in the eastern districts are exceedingly light, the markets of this country will be, to a very large extent, dependent for their late winter and spring supplies upon storage stocks of Winesaps and similar varieties in the Northwest. Thus these varieties occupy an exceedingly strong technical position and there is every reason to believe that these stocks will eventually be sold at strong prices and returns therefrom be highly profitable to the growers.

Having already turned such a very large quantity of fruit into cash, which has enabled them to pay their debts and put them in a comfortable financial position, the

growers can now carry the remaining stock without undue strain.

Treat Your Soil with Toro Brand Agricultural Sulphur



Improves alkali soil, transforms latent potash and phosphates into available plant foods.

Prevents wire worms, eelworms or nematodes, smutty grain, ants and potato scab. 220 lbs. per acre has increased crops up to 500%.

For dry dusting, use "ANCHOR" Brand Velvet Flowers of Sulphur.

For Lime Sulphur Solution, use DIAMOND "S" Brand Refined Flour Sulphur. Sold by leading dealers.

Write for circulars Nos. 6, 8, and 10, price-list and samples. State for what purpose sulphur is to be used.

SAN FRANCISCO SULPHUR CO.
624 California St. San Francisco, Cal.

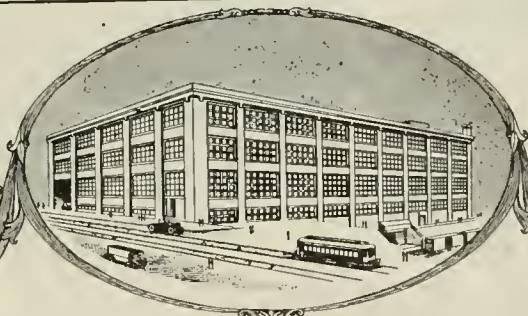
Apples, Pears, Peaches Potatoes, Onions

and all kinds of Fruit and
Produce Bought for Cash..

Address us as to what you
have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.



F. C. Stettler Mfg Co.

Portland - Oregon

Lithographers

Color Printers

Labels

Cartons

Folding Boxes

Cut Outs

Display Cards

Special Advertising

Stiff Boxes Plain and Fancy

OREGON

AT THE annual meeting of the stockholders of the Berry Growers' Packing Company and the Co-operative Berry Growers, held in Gresham December 13, capital stock of the packing company was increased from \$15,000 to \$25,000. This company distributed 8 per cent dividend checks at the time.

COLUMBIA county last year showed an increase of 400 per cent in berry acreage, according to A. L. Morris of Warrens. The county now has practically 700 acres in berries, he stated.

THE steamer *Nebraska*, which sailed from Portland early in December, carried away the last of the apple crop produced in the Willamette Valley. The tonnage handled by the association amounted to 131 cars. This was 75 per cent of the valley's unusually light crop.

W. A. MAKEPEACE, one of the biggest cranberry growers in America, recently visited the bogs of Clatsop county. He represents the Makepeace family of Cape Cod, Mass., owner of 2000 acres of cranberry lands in Massachusetts and New Jersey.

ASHLAND held a big winter fair last month in which horticultural products had an outstanding place. The apple display embraced 200 boxes of blue-ribbon class.

THE Hood River Apple Vinegar Company has increased its capital stock to \$250,000 for the purpose of expanding its plant. A new development is the utilization of all pomace in the making of pectin, for which it reports a demand that is astonishing.

SIXTEEN cars of apples were shipped from Milton to points in Texas and Kansas by W. C. Hobson. The apples were Winesaps, Romes, Jonathans, Delicious and Black Beauties. Mr. Hobson realized \$1.50 a box for them f. o. b. Production on his own orchards for the season amounted to 18,000 boxes.

IN THE season just ended the Sherwood cannery packed 180 tons of fruit. There were 54 tons of blackberries, 40 of prunes, 18 of cherries, 19 of strawberries, 17 of loganberries, eight of raspberries and six of pears.

FOUR years ago Math Theis of Woodburn planted 1000 gooseberry bushes on less than an acre of ground. Last season the family sold berries to the amount of \$190.40, besides giving quantities to relatives and canning a lot for home consumption. So well pleased are they with results that more bushes will be set out this year.

BRUCE CUNNINGHAM has become known as the "loganberry king" of the Willamette Valley. He has 45 acres in bearing and 60 acres which he planted last spring. During the fall he prepared 40 acres more to be put into logans.

FROM 4 1-2 acres B. T. Haley, Crockett fruit man, marketed 5185 boxes of packed apples. His crop was as good in quality as in quantity.

PRUNING week was observed in Jackson county December 19-24 with a meeting in Medford, followed by demonstrations at Talent, Ashland, Central Point and other localities.

BECAUSE of the snowstorm, apple shipments from Hood River were held up for more than a week. The storm was not accompanied by very low temperatures and there was no loss of fruit already loaded, even though heaters were not brought into use. As soon as the weather cleared shipments of apples at the rate of 30 cars a day were made.

WASHINGTON

THE twelfth annual convention of the Western Washington Horticultural Association will be held at Mount Vernon, commencing February 8 and lasting four days. This association is primarily the educational organization of the berry growers of western Washington. On account of the importance of the potato and seed crops of Skagit county the program committee plans to have sessions devoted to these two crops.

COWLITZ county now has a berry association, one having been formed at Kelso last month. It is known as the Cowlitz County Berry Growers' Association. Directors elected to represent the various districts are: M. V. Edmonds, Kelso; I. C. Chuinard, Ostrander; G. E. McCoy, Castle Rock, E. H. Stewart, Kalama; J. W. L. Cheever, Woodland.

AN EXHIBIT of 30 boxes of selected extra fancy apples were sent from Yakima for display at the annual convention of the American Pomological Society, at Toledo, O. The display was sent by the Yakima Fruit Growers' Association, the Horticultural Union and the Winthrop Orchards. Romes, Winesaps, Staymens, Yellow Newtowns and Delicious were included in the exhibit.

ORCHARDS of the Wenatchee Red Apple Company at Quincy, aggregating 220 acres with 160 acres in full bearing, have been sold to a group of purchasers represented by G. A. Loudonback, for a reported price of about \$125,000. Mr. Loudonback has been manager for the Associated Fruit Company of Chicago at Cashmere. It is intended to subdivide the tract and Staymens.

ABOUT 300 acres of orchard formerly owned by the Moses Coulee Fruit Land Company, on which mortgages had been foreclosed, has been purchased by the Wells & Wells Fruit Company. The land was originally sold in small tracts and planted to orchards about 14 years ago and the difficulties arose when many of the purchasers were unable to continue their payments.

AN ADDITION to the Spokane plant of the Inland Products Company is under construction. This will provide for four new lines—the making of jams, jellies, preserves and pickles—next summer, with an addition of 50 workers to the usual force of 100. An expert will be brought from the east to handle the new departments. The new building and its equipment will be in shape to handle the earlier soft fruits and vegetables next spring.

IT IS estimated that Washington's cranberry crop two or three years hence will be worth \$500,000 annually. This year's crop, produced largely in the bogs of the Ilwaco district, Pacific county, had a value of approximately \$250,000.

WITH compliments of Hugh C. Wallace, former American ambassador to France, 20 boxes of specially selected apples were forwarded



Golden Winesap

A Wonderful Apple

It has the juicy tartness of the Jonathan, the meatiness of the old Winesap, the beauty of the Winter Banana, the deep gold color of the Grimes and the keeping qualities of the good old Ben Davis. Strong grower, healthy and vigorous. Originated in Utah and should be hardy everywhere. Bears young and very profusely.

True Delicious Apple

This is the ideal farm apple. Large fruit, beautiful dark red, quality unsurpassed. Flavor sweet, slightly touched with acid, comes out of storage in perfect condition.

Campbell's Early Grape

A new variety, vigorous growth, very hardy, very early and an abundant bearer. Good shipper; keeps for weeks after ripening.

Perfection Currant

In our entire experience this is the best bearer, the largest, sweetest and easiest to pick. Rich, mild flavor, less acid and few seeds.

Low Prices Direct to You

All kinds of Fruit Trees, Plants and Shrubs, Vegetable, Flower and Field Seeds, etc., of the best quality, at very low prices. Get our Big Free Illustrated Catalog and prices before you buy.

SONDEREGGER NURSERIES & SEED HOUSE
80 Court Street Beatrice, Nebraska

Seeds and Trees That Grow

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

by express last month from Yakima to prominent men and women of Paris. Mr. Wallace selected beautifully colored Winesaps, running 100 to 113 to the box and these were carefully packed for the long journey.

▲ ▲ ▲

THE canning factory of Younglove & Co., at Sunnyside, will continue in operation until about the middle of this month and is expected to handle 1000 tons of culls. The plant canned 150 tons of pears.

CALIFORNIA

AN IMPORTANT deal in vineyard and deciduous fruit land was recently concluded at Sacramento, when the Earl Fruit Company purchased 10 tracts from the Western Fruit Company and Mr. and Mrs. Henry L. Klensorge at about \$200,000. Mr. Klensorge is president of the Western Fruit Company. It is said that the Earl company intends to make further purchases in the district.

▲ ▲ ▲

IT IS announced from San Francisco that arrangements have been completed whereby a large amount of fruit and vegetables to be furnished each year by the Fruit Growers of California, Inc., to Hunt Brothers' Packing Company will be put out by this company on a co-operative basis. The growers' association has heretofore had no facilities for canning any of its products and the new arrangement is expected to insure its members some additional profits.

▲ ▲ ▲

W. J. CHARLESWORTH, for the past two years manager of the California Fruit Distributors, has resigned that position. He announced that he expects to remain in the fruit industry in Sacramento.

▲ ▲ ▲

PRACTICALLY final estimates of the California Prune and Apricot Growers, Inc., on the season's crop of the state, placed the total at 150,000,000 pounds, or about 10,000,000 pounds more than given in earlier estimates.

▲ ▲ ▲

AMONG its other records in fruit production this state is preeminent in output of peaches, providing 38 per cent of the national crop. The 1921 peach crop of the state has been placed at 13,800,000 bushels, which enriched the growers to the extent of about \$26,220,000. This showing is about twice that of Georgia, which ranks second in production of peaches.

▲ ▲ ▲

DIRECTORS of the California Peach and Fig Growers have had under consideration a general reduction of wages, but are not expected to take definite action until early this year.

▲ ▲ ▲

ASERIES of pruning demonstrations were conducted in the Santa Clara valley the latter part of November by Professor A. H. Hendrickson of the deciduous fruit station at Mountain View.

▲ ▲ ▲

RETURNING from a trip through Oregon and Washington, W. N. Shelley, representative of the Sebastopol Apple Growers' Union, reported to his association that it was receiving better prices for apples than growers in the sister states.

▲ ▲ ▲

APPLÉ shipments from the Watsonville district totaled 2433 cars by about December 1 and it was estimated that 500 cars remained to be moved. Of the total 729 cars had been shipped east and 1704 cars to California points.

IDAHO

DESPITE the fact that he is 77 years "young," E. F. Stephens of Nampa, finds that looking after more than 200 acres of orchards, of which he owns approximately one-half, cannot fully occupy his time. Recently he acquired a half interest in 75 acres of fine, "frost-proof" orchard

land in the Central Cove district, to be planted at once. Spare moments he devotes to the selling of trees he makes it a point to supply at wholesale prices. He has placed more than two carloads and says he will make it three.

▲ ▲ ▲

THE Oregon Packing Company, at Lewiston, handled 1350 tons of apples during the season just closed, according to Manager William Crapo. The plant handled only cherries and apples the past year. Approximately \$100,000 was paid out for fruit. An average of 185 persons were employed, at an operating expense of \$32,000.

▲ ▲ ▲

FARM and orchard management was one of the leading topics at the farmers' institute, conducted at Emmett last month under supervision of four specialists of the University of Idaho extension division.

▲ ▲ ▲

J. J. STUTZ, grower of Dudley, Kootenai county, carried home the big prizes from the show of the Pacific Northwest Potato Growers' Association at Spokane last month, with 20 splendid Netted Gems.

A. F. TALBOT, South Caldwell, has 100 acres of apple orchard from which he reports crops each season that have brought enough from each acre to buy an additional acre of orchard land. He says he would be purchasing those additional acres if his neighbors were only willing to sell.



YOU'LL be surprised at the little cost at which you can make your house look distinctive. The window cut accompanying this ad, is known as the "Queen Anne" design.

For an additional \$15 or \$20 your whole house can have this classy window. Before you finish building send for our catalog. Rovig, 2227 First Avenue South, Seattle "Better Millwork."



She knows why!

THE same uniform richness that makes Ghirardelli's so "smooth" in the cup makes it work smoothly in the oven. Besides, it saves fussing with bar chocolate—it's already ground, ready for you! At your grocer's—in ½ lb., 1 lb. and 3 lb. cans.



Say "Gear-ar-delly"

D. GHIRARDELLI CO.

Since 1852

San Francisco

Send for new recipe booklet

GHIRARDELLI'S
Ground Chocolate

With the Poultry

NEW BREED HERALDED

IT IS HIGHLY probable that readers of poultry literature will soon be hearing quite a little about a new general-purpose breed of chickens. This is particularly likely because the new breed was developed under government supervision and the government has already given rather extensive publicity for it.

It was with the aim of developing a white fowl, with red ear-lobes and producing a white egg, that the breeding experiments which have resulted in bringing forth the Lamona chicken were undertaken. The name, incidentally, honors the man who conceived and helped carry through the project—Harry M. Lamon, senior poultryman of the Bureau of Animal Husbandry. With the assistance of other federal poultrymen, the new fowl was developed at the experiment station at Beltsville, Md.

The new fowl possesses characteristics of great merit, say the government men. It has sufficient size to fit the demands of the great number of consumers who want a bird weighing 4 to 6 pounds. The body is long and of good depth, giving a large amount of the highly desirable breast meat, and at the same time large capacity for the reproductive organs.

The Lamona fowl is larger than the Leghorn, approaching in size fowls of the American class. It is white, which is the most desirable from the marketmen's viewpoint. It has a comb and wattles of medium size, which are not easily frosted, thereby checking development or egg production. It is well feathered, which makes it resistant to sudden changes in temperature. These points combine to make it an exceptionally good winter layer of white eggs.

BREEDING PENS

WHILE it may be a bit early in the higher altitudes it is none to soon for poultry raisers of the Pacific Coast valleys who propose to do their own hatching, to give attention to mating for the purpose of obtaining the finest chicks possible. Too many of the smaller poultry producers are wont to buy eggs from someone else, or just take the general run of their own eggs for hatching purposes. It is a comparatively simple matter to mate up the better fowls of the flock and put them to producing eggs for hatching, in a separate pen. Not to do this, but merely to use the general run of fertile eggs practically insures deterioration for the flock.

THOSE who may be planning on expanding their incubator equipment, or on using an incubator for the first time during the coming hatching season, can profitably devote a few hours' time to consideration of makes. Performance records as reported by the neighbors and poultry experts are the best guide.

THERE is far more to the suggestion that drinking water for the hens be warmed when freezing temperatures prevail than the humanitarian appeal. There is serious loss of bodily heat from the hen that must drink ice-cold water, and this energy must be made up in some other way or its loss will mean fewer eggs. Again, the hen will drink more copiously—an important aid to egg production—if the water is warm.

WHILE chilling temperatures prevail eggs intended for hatching must not be left too long in the nests. They should be gathered two or three times a day at least.

THOSE who have purebred fowls should take enough pride in their best birds to exhibit them at some of the winter shows.

MANY excellent authorities urge that only one-third the daily rations be given hens in the morning, the two-thirds to be fed in the evening.

▲ ▲ ▲

NOW is the time when it requires most planning and foresight to provide ample green food-stuffs for the laying hens.

Our Inquiry Department

WITH reference to the article in your December, 1920, issue on the para dichlorobenzene treatment for peach tree borer, I should be glad to know from whom this chemical can be obtained and the approximate cost this year, as the price has doubtless been reduced since the article was written.—F. H. Keane, B. C.

We are sending you the name of a wholesale drug firm which will supply your druggist, as it does not sell at retail. By the pound the price is quoted to us as \$1, but should be somewhat less in large quantities.

In case you or others who read this wish to obtain the latest information on the use of para dichlorobenzene it may be obtained by sending for Farmers' Bulletin No. 1246, to the Chief of Division of Publications, U. S. Department of Agriculture, Washington, D. C.

Arrow Carbolineum

(Formerly Avenarius Carbolineum)

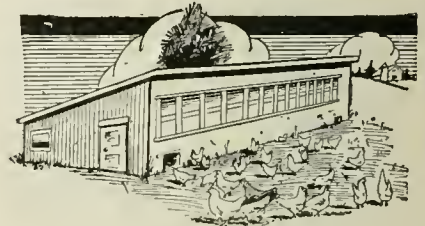
Protects poultry against vermin—Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING
COMPANY
222 E. Water St. Portland, Oregon

Marketing News of Interest

UP TO December 10 there had been shipped in the United States 66,000 cars of apples, compared with 81,000 cars by the same date in 1920. A decrease of over 32,000 cars from the barrel apple sections was about half counter-balanced by a gain of over 16,000 cars from the northwestern boxed apple states.

Washington, as usual, is the leading state, having moved over one-half the shipments of boxed apples and over one-third of all shipments. Idaho,



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

CAN YOU USE SOME EXTRA SPENDING MONEY?

BETTER FRUIT has a striking offer to make you for a few hours of your spare time. We want special representatives in many of the fruit sections of the Northwest and Canada for the next three months—possibly your territory is open. Drop us a post card for details.

BETTER FRUIT PUBLISHING CO.

12th and Jefferson Sts.

Portland, Oregon

Oregon and California had shipped about 5000 cars. The increasing movement from Idaho has become a feature of recent seasons. The Gem state has already about doubled its carlot output of last season.

Northwestern box apples, says a government report, have been holding to much more uniform prices from season to season than others. Extra fancy grades of leading varieties, like Jonathan, Spitzenberg and Winesap, it is cited, have commonly sold in eastern markets around \$3 a box seldom at more than \$4 during the early part of the season or less than \$2, as compared with extremes of \$1.50 to \$10 a barrel for Baldwins.

WHILE apple markets generally have been rather dull in recent weeks, local movement of a holiday character has been good, with demand chiefly for the better grades.

The general range of New York prices to jobbers of northwestern apples, just before Christmas, follows:

Spitzenbergs, extra large to very large \$3 to 3.25, small to medium \$2.50 to 2.75, fancy large to very large \$2.60 to 2.75, small to medium \$2.25 to 2.50, C grade medium, mostly \$2.25; Romes, extra fancy, medium to large, \$2.50 to 2.75, small, \$2.25 to 2.40, fancy medium to large, \$2.35 to 2.50, small, mostly \$2.25. Delicious, extra fancy, large to very large, \$4 to 4.25 few high as \$4.50, medium \$3 to 3.50, fancy medium \$2.50 to 2.75, C grade, small, \$2 to 2.25. Newtowns extra fancy, large to very large, \$2.75 to \$3; few \$3.25; medium mostly, \$2.50; fancy medium to large, \$2.50 to 2.75; few very large, \$3; small, mostly \$2.25. Ortleys, extra fancy, car run, \$2.65; fancy, car run, \$2.50; C grade, car run, \$2.25. Staymens, fancy, car run, \$2.25; C grade, car run, \$2.

ACCORDING to W. T. Jenks, manager of the Willamette Valley Prune Association, there is every prospect that the prune market will continue strong and may possibly advance. He believes that the season's crop from western states will be entirely cleaned up by next June, leaving an open market for the 1922 crop. Prospects for a heavy crop in 1922 are excellent and he predicts a prosperous year for the growers.

APPLE growers were elated early last month over a new reduced rate put into effect for apple shipments by refrigerated steamship from the Pacific Northwest to Atlantic Coast points. The new rate is 40 cents a box, to which freight from interior points and other charges add an average of about 22 cents a box. This average total of 62 cents is to be compared, it is said, with a charge of 75 cents by rail, or 87 cents if the rail lines put into effect rate increases announced to become effective this month.

Booth & Co., have completed construction of a fruit juice plant at Centerville, Cal.

Bees and Beekeeping

Edited by AMOS BURHANS

A READER who has heard of the splendid qualities of pure bred Italian bees asks me how he can Italianize his colonies. It is not much of a job.

Get a young, purely mated Italian queen. She may be had of a reputable queen breeder for \$1 to \$3. My experience is that July to September is the easiest, cheapest and best time to requeen and Italianize your hives. This is especially true if there is anything of a honey flow in your locality. The removing of the old queen from a colony and the introduction of a purely mated Italian is all there is to Italianizing a colony.

Bees accept a new queen readily during a honey flow. If there is no flow of nectar I usually feed the colony into which I put a new queen, a few days before her introduction. A half pint of sugar syrup made half and half by bulk, boiling water and cane sugar, is the only feed necessary. Bees that are storing nectar, natural or artificial, accept a new queen most readily.

When your new queen arrives she will be in a little wood and wire cloth cage, already to be introduced. Find the old queen. She will probably be a black one if she is like the majority of bees throughout the country and her bees will be nervous when you open their hive, running over the combs pretty fussily. To partly stop this, get your smoker ready. Fill it with old rotted apple wood or hickory or planer shavings or excelsior. Clean old rags or old burlap will do. But don't use greasy waste or greasy rags, unless you want to irritate the bees.

Blow a little smoke in at the entrance of the hive. Pound on the top of it a couple of smart blows—until the bees within begin to set up a roaring—which means they are filling up on honey. They will not run on the combs when doing this and the queen will be easier to find. If you can locate her on a frame of comb or elsewhere, pick her up and pinch her head off. If she cannot be found this way, put a queen excluder on the front of the hive and shake the bees in front. They will all run through the excluder into the hive and the queen will eventually be found outside.

THEN put the good young queen in her cage across the top of the frames, as per the directions that accompany her. In a couple of days open the hive and cut out all queen cells and tear the pasteboard off the candy hole so that the bees can eat out. Be sure to locate and destroy all queen cells as the bees will try to rear a queen as long as the new one has not yet been introduced to them. Do not disturb them again for five days or a week, but keep feeding the colony if there is no honey flow. Sometimes any disturbances of the colony within a few days after the new queen gets out of her cage will be laid to her and her bees will ball her. They may kill her when doing this so let the colony alone for a while after fixing the cage so the bees can eat her out.

In 21 days from the time she begins laying the new queen's bees will emerge from their cells and gradually, as the older bees of the former queen die, the colony will become entirely purebred Italian. The queen, having been mated for life in the queen breeder's yards where she was reared, her eggs will always produce purebred Italian bees. Italian bees are most always gentler than black or German bees, are better honey gatherers, larger, and more easily handled.



Helpful Books on Home Building
Craftsman Bungalows, 1922 Edition De Luxe. 112 pages of new plans and building ideas for those who crave distinctive homes. Gives plans, photos of interiors, exteriors, size, cost, etc., of scores of artistic bungalows costing from \$800 to \$8000 and suitable for any climate. Largest bungalow book published. Postpaid, \$1.00.

Exclusive Colonial Bungalows and Residence Designs. Most original and artistic plan book ever printed on this beautiful style of architecture. Profusely illustrated. Postpaid 50 cents. Order these books today. Money back if unsatisfied.

YOHO & MERRITT
Craftsman Designers
 Empire Bldg., Seattle, Wash.



RELIABLE NURSERY PRODUCTS

Large assortment of the best varieties in Fruit and Nut Trees, Small Fruits, Shade and Ornamental Trees, Shrubbery, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department. Planting plans furnished for residence grounds, large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Oreno, Ore.
 Opportunities for More Salesmen

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
 12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

CORY THORNLESS BLACKBERRY—Best of all; extra large, vigorous plants ready; satisfaction guaranteed; illustrated price list. Write Chas. E. Mortenson, Lodi, California.

APPLE TREES and a full line of nursery stock at reasonable prices; save agents' commission by ordering direct from nursery. Write for price list. Lawson Nursery, Gates, Oregon.

BERRY GROWERS! If you intend planting a few plants or a few acres, send your name on a Post Card to Shady Oaks Berry Farm, Saratoga, Calif.

50,000 CHOICE LOGANBERRY PLANTS. Shipped direct from out of the best fields in the state; unusual low price. Place your order now for spring delivery. Harry Lanum, Rt. 4 Salem, Ore.

CORY THORNLESS BLACKBERRY—Large, delicious. You get well rooted plants true to name from Pioneer grower. Wm. Mortenson, Rt. 1, Lodi, California.

LOGANBERRIES, Raspberries, Strawberries: Inspected, low price, best quality. Red Feather Berry Farm, Clackamas, Oregon.

THE NEW GIANT RASPBERRY, LaFrance, and 30 other varieties of small fruits. Shady Oaks Berry Farm, Saratoga, Calif.

BEEES

BOOKING ORDERS now for spring delivery. Virgins, golden and leather-color Italian queens; bees by the pound and nuclei. Write for prices; circular free. A. J. Pinard, 440 No. Sixth St., San Jose, Calif.

BEEES AND QUEENS—Keep bees to pollinize your fruit. Get more and better fruit. Make a profit off the fruit and bees too. Write for circulars. Nueces County Apiaries, Calallen, Texas.

"SUPERIOR" Foundation (Weed Process) and "Everything in Bee Supplies." Superior Honey Company, Ogden, Utah.

POULTRY

BABY CHICS—By our thousands of satisfied customers we have proven that we supply some of the very best BABY CHICS offered to the people of the Northwest. From O. A. C. Strain 221-300 egg line. Place your order now for spring delivery. First hatch February 14th. Portland Seed Co., 180 Front Street, Portland, Oregon.

FOR SALE—Pure Bred S. C. and R. C. Reds and Barred Rocks from good laying strain. I don't pay express. Cockerels \$3.50, Pullets \$2.50 10% discount on dozen. W. A. Rowe, American Falls, Idaho.

WHITE WANDOTTES—Egg Bred Males. Size and quality backed by high official records. A. Gronewald, The Dalles, Oregon.

BLUE ANDALUSIANS—Stock and eggs for sale. D. M. Calbreath, Monmouth, Oregon.

CHOICE Mammoth Bronze Turkey Toms, \$10. Mrs. Amelia Reimers, Eagle, Idaho.

PURE BRED Sicilian Buttercup cockerels, \$5 each. Charles Carland, Route 2, St. Maries, Idaho.

REAL ESTATE

FOR SALE—Ideal Apple Orchard, 27 acres in the property, Delicious, Rome, Winesap, Stayman, 1000 trees, principally 6 to 8 years old, commencing to bear, also peaches, grapes and commercial raspberries; ideal fruit soil, gently sloping northern exposure, abundant springs and branches, all necessary buildings; right at railroad station. Wonderful year-round climate, beautiful mountain scenery, purest water. Price \$7,500 of which \$5,000 must be cash. Bolling Hall, Waynesville, N. C.

FOR SALE—62-acre farm, 48 miles south of Portland; running water; horses, cattle, machinery and furniture. A. H. Koppang, Silverton, Ore.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FOR SALE—Irrigated Apple Orchard, Idaho: Two 10-acre tracts; water rights; tenth year. Estimate '21, 9000 boxes; standard commercial varieties. Good community with churches, schools, and railroad facilities. Convenient to state highway. A good proposition for relatives or friends. Other interests compel non-resident owner to sell; \$7000 each; terms. Address W. M., care Better Fruit.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

TO LEASE—35 to 200 acres of first class fruit land on shares. Martin Bros., Brownsville, Ore.

MISCELLANEOUS

DON'T EXPERIMENT—It costs money. For \$20 you can get my blue prints. "Dencer Drier best by test." The Dencer Drier will shorten time of drying and save money on fuel. It turns out a superior product. It costs less to dry per ton, and less to build than any other drier of same capacity. I use only one stove for six tunnels. Each tunnel holds 136 half-bushel trays. My driers have been a pronounced success for five years. Edward Dencer, Rt. 3, Box 158, Salem, Oregon. Phone 88 F2.

TRACTOR BARGAINS—Cletrac "W," only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Bradley, 425 E. Morrison St., Portland, Oregon.

WANTED—To examine your orchard for you before you buy. I saved one man \$5000 on a \$14,000 deal. To look after orchards of non-resident owners. Many are poorly cared for and rapidly depreciating in value. Private pruning demonstrations and consultations given. Luke Powell, consulting horticulturist, Yakima, Wn.

WALL BOARD—Write for samples of Washington plaster wall board; won't warp, won't burn. Manufactured by Washington Building Products Co., 6851 E. Marginal Way, Seattle, Wash.

SWEET CLOVER SEED for sale—Buy direct from the producer and save money. Write for samples and prices. Address Geo. Forest, Standish, California.

FOR SALE—Ford Truck; Cutler two-section grader, with gas engine; box press and ladders; all practically new; \$1000—a bargain. Address W. M., care Better Fruit.

HONEY—Finest table honey: "Western Blossom" brand, in 6-pound tin can, postpaid for only \$1.25 up to fourth zone; absolutely unadulterated—just as the bees made it. Spokane Seed Co. 906 First Ave., Spokane Wash.

CLEAN VEATCH and grey seed oats for sale. W. W. Harris, Oregon City, Oregon.

PURE EXTRACTED HONEY—\$7.50 per five-gallon can; two cans, \$14.00. Everett Sauter, Touchet, Wash.

HOMESPUN TOBACCO—Chewing, 10 pounds, \$2.50; 20 pounds, \$4; smoking, 10 pounds, \$2; 20 pounds, \$3.50. Farmers' Union, Mayfield, Ky.

HONEY—A-1 extracted honey, 10-pound pail, \$1.70, postage paid to fourth zone, cash with order. W. C. Forcher, Grand View, Idaho.

TOBACCO—1919 leaf best chewing, three pounds, \$1; ten, \$3; chewing and smoking, ten, \$2.50; regular smoking, ten, \$1.50; fifty, \$6; satisfaction guaranteed. Producers' Distributors, Murray, Ky.

FOR SALE—Fresh extracted honey: five-gallon can, \$7.50; two cans, \$14.50; six ten-pound pails, \$8.50; twelve five-pound pails, \$9.00. A. L. Traner, Touchet, Wash.

HONEY—Pure, First Quality Yakima Valley alfalfa, sweet clover honey; direct from producer. Send for circular and prices. Oliver Sires, Wapato, Washington.

FOR SALE—Hubam annual sweet clover; scarified seed; genuine Hughes strain; Free Sample. Jas. H. Kitchen, Rt. 5, Springfield, Ohio.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO. 427 Oregon Building Salem, Oregon

POSITIONS

WANTED—Position as orchard manager; college graduate; married and life experience in orchard work; now running large orchard in northwest. Address M. P., care Better Fruit.

\$135 MONTH COMMENCE. U. S. government railway mail clerks. Men, boys over 17; steady; Vacations; list positions free. Write today sure. Franklin Institute, Dept. A 106, Rochester, N. Y.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

COLUMBIA NURSERY COMPANY

1490 Union Ave., No. Portland, Ore.

Milton Nursery Co.

MILTON, OREGON

BING, LAMBERT, ROYAL ANN CHERRY TREES

New Catalog for a Postal

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street SALEM, OREGON

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.

Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.

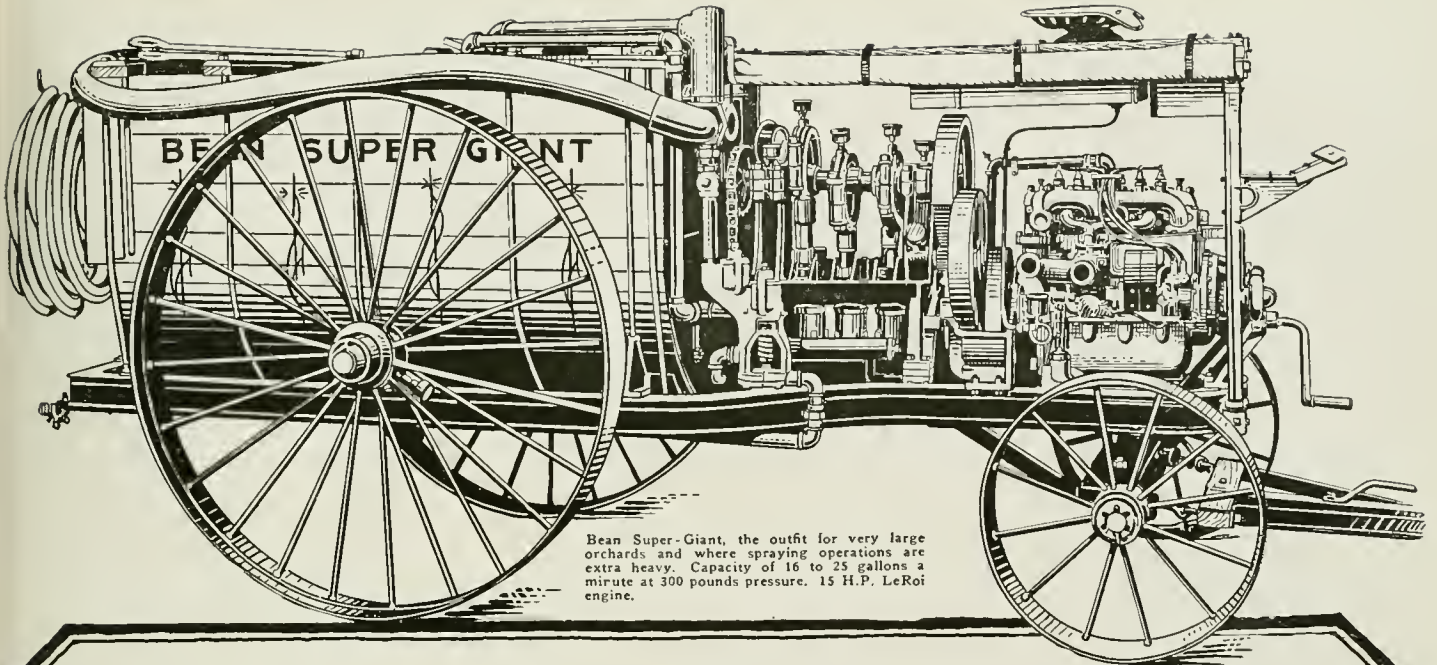


The ARCADY Company Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Bldg - 12 1/2 Jefferson St. - Portland, Oregon
 Also PRINTING MULTIGRAPHING ADDRESSING MAILING MAILING LISTS
MAIN 8829
 THIS PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT



Bean Super-Giant, the outfit for very large orchards and where spraying operations are extra heavy. Capacity of 16 to 25 gallons a minute at 300 pounds pressure. 15 H.P. LeRoi engine.

Insure Your 1922 Crop with a "BEAN"

There's money ahead for the grower who takes good care of his trees. Thorough and energetic spraying is the only safeguard against tree diseases that reduce the crop, result in inferior fruit, and even kill the trees, if permitted to run their course unchecked. Adequate spraying equipment is vital. Makeshift outfits and old type rigs with insufficient pressure and too limited capacity will not do. You need a sprayer that will cover your orchard quickly and effectively with the least trouble and expense. In brief,

You Need a "Bean"

While retaining all the sturdy, dependable features which have made the Bean line famous, several important improvements have been made this year, including the Bean 6 H. P. engine, which is used on all our larger outfits with the exception of the Super-Giant, which has the LeRoi 15 H. P. engine. The Bean engine is the latest and best production of Mr. E. B. Cushman, noted as a designer of good engines.

Bean Troubleless Ball Valves

Bean Threadless Ball Valves can be opened up entirely and every part removed in less

than two minutes. This is done without lowering the pressure, stopping the engine, or drawing the liquid from the pump.

Porcelain-Lined Cylinders

Used on Bean Sprayers since 1886 and proven to be the correct solution to the problem of long-wearing cylinder lining. These cylinders never need replacing under three or four years, and we have known them to wear for fifteen.

The Bean Pressure Regulator

The biggest single feature of the Bean line. It holds the pressure exactly where you want it, saves fuel in the engine, and wear and tear on the pump, and is absolutely safe and dependable. Fully described in our new catalog.

One-Piece Steel Bedplate

The Bean is the only outfit built today with a steel bedplate made in one piece, without wood floor. Every bolt from the engine,

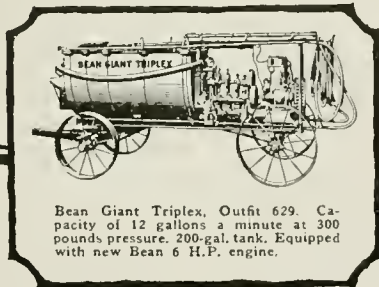
pump, and tank is secured to this frame, thus insuring the utmost rigidity. H. A. Watkins of Fruita, Colo., has just written us as follows: "I never knew my Bean to stop running when crossing creases as some others do. My rig runs absolutely without trouble."

Only Pump Without a Stuffing Box

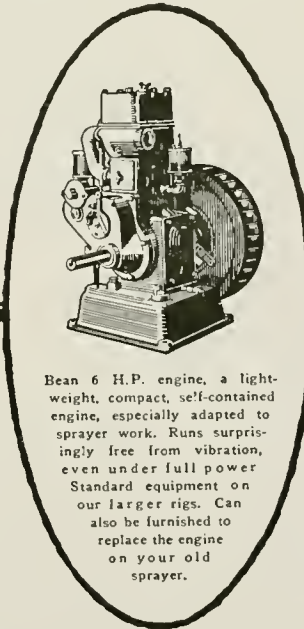
No stuffing box on a Bean pump, therefore no stuffing-box troubles. The cup-shaped molded plunger, an exclusive Bean feature, is held so close to the porcelain lining of the cylinder on the downstroke that no packing box is necessary. Less friction, too, on the upstroke.

Many Other Important Advantages

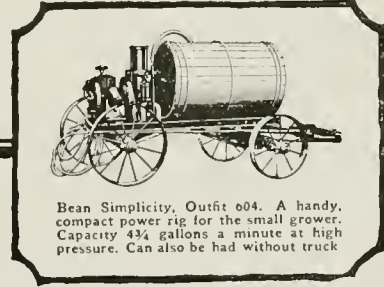
Get the new Bean Catalog, which illustrates and describes the entire Bean line from the mighty Bean Super-Giant, shown above, with its capacity of 16 to 25 gallons a minute at 300 pounds pressure right down to the little Bean Simplicity, the most popular little rig known to the fruit-growing world. Sign and send the coupon for your copy of the catalog.



Bean Giant Triplex, Outfit 629. Capacity of 12 gallons a minute at 300 pounds pressure. 200-gal. tank. Equipped with new Bean 6 H.P. engine.



Bean 6 H.P. engine, a light-weight, compact, self-contained engine, especially adapted to sprayer work. Runs surprisingly free from vibration, even under full power. Standard equipment on our larger rigs. Can also be furnished to replace the engine on your old sprayer.



Bean Simplicity, Outfit 604. A handy, compact power rig for the small grower. Capacity 4 3/4 gallons a minute at high pressure. Can also be had without truck

MANUFACTURED BY

BEAN SPRAY PUMP CO.

Originators of the first high pressure sprayer

118 West Julian Street SAN JOSE, CALIFORNIA

BEAN SPRAY PUMP CO.
118 West Julian Street SAN JOSE, CALIFORNIA

Please send me a copy of the new Bean Catalog.

Name Street

Town State

Kind of Fruit No. Acres

PLAYING THE GAME

NEVER in the history of the fruit trade has any concern made heavier losses than we did last season in the apple deal. This is a matter well known to all the fruit trade of the United States. It is, therefore, more than gratifying to us to announce the continuance of our policy of doing business on the same basis, regardless of whether we win or lose.

We do not wish to appear egotistical, nor do we wish to put ourselves on a pedestal of superiority over our friends and competitors. However, we can look back upon our business experience of last year with pride. The policy of this firm is known throughout the world—wherever a single package of fruit or produce is handled—in a commercial way.

The code of ethics employed by this firm is based upon the American ideal of the square deal.

When Moses received the ten commandments and brought them from the mountain to the chosen people, the fruit trade was not taken into consideration. If it had been, we are quite sure that there would have been woven in much pertaining to the fruit business, and written thus, to the everlasting honor and glory of a great and grand industry.

1. Thou shalt play the game straight, irrespective of consequences.
2. Thou shalt pay all drafts, regardless of market conditions upon arrival of cars.
3. Thou shalt back thy judgment with thine own coin.
4. Thou shalt not turn down any cars, unless thy shipper is actually trying to defraud thee.
5. Thou shalt consider a contract a contract and which is made not to be broken, no matter what the cause.
6. Thou shalt consider thy firm's good name thy biggest asset.
7. Thou shalt consider it a privilege to lose, from time to time, for as long as thou canst take a loss without a kick, thou art a good sport and deserveth success.
8. Thou shalt keep one set of books, so when thy shipper calls on thee and desires to examine thy accounts, thou canst look him straight in the face and tell him to go as far as he likes.
9. Thou shalt never overquote the market, thereby giving false witness against thy neighbor, who has troubles enough of his own and which may induce the husbandman to ship goods to thee which he could have sold at higher prices elsewhere.
10. Thou shalt not covet thy neighbor's business, for there is enough for everybody and then some.
11. Thou shalt particularly take care of the goods sent to thee on consignment by thy fellow man, who may be thousands of miles away from thy business abode, but who depends upon thy honor and wisdom to see that he receives proper compensation for the harvest made by the sweat of his brow.

By playing the game according to these commandments, thou wilt live long in the land and wilt earn a heritage of which thy sons will be proud when thou art laid to rest among thy fathers for, after all, a good name is greater than worldly riches.

Steinhardt & Kelly

273-277 Washington Street

Cordoba 2260 Buenos Aires
ARGENTINE

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

NEW YORK

FIELD OFFICES:

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

102-106 Warren Street

Rua de Rosario 102 Rio de Janeiro
BRAZIL

Yakima, Wash.
Wenatchee, Wash.



BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

FEB 2 1922

B13-Columbia Univ Librar
30 Dec 23



FEATURES IN THIS ISSUE

Spray Calendar for 1922

What of the Use of Spreaders?

Miscible Oils and Fruit-Tree Leaf-Roller

Control of Anthracnose, or Black Spot Cancer

Treatment of Winter Injured Trees

Cherry Growing in Yakima Valley

The Red Rome, a Promising Apple

10 Cents
The Spoke Copy

ANNUAL SPRAYING NUMBER, FEBRUARY, 1922

SIMPLICITY

an outstanding feature—
of the **NEW**

CATERPILLAR

T 35 TRACTOR

Here is the machine of greatest simplicity—designed to save your time, money and temper. Look at its new and sensible features of accessibility—its elimination of non-essential parts.

Only three units to the entire machine—motor—transmission—trucks with track. Each unit complete in itself. Complete enclosure against dust and dirt.

Valves and camshaft are placed overhead—easy to get at by simply removing cylinder head.

Tappets, tappet guides and push rods are eliminated—no leads, wires, pipes or hose between the motor and the rest of

the machine—nothing in the crankcase but the crankshaft.

“Caterpillar” T 35 Tractor is ideal for orchards, vineyards and berry fields; for general service on small acreage and for auxiliary service on big farms. It is the right size for road patrol work, hauling and general contracting. It has almost unlimited usefulness in belt work—pumping, sawing, grinding and other operations.

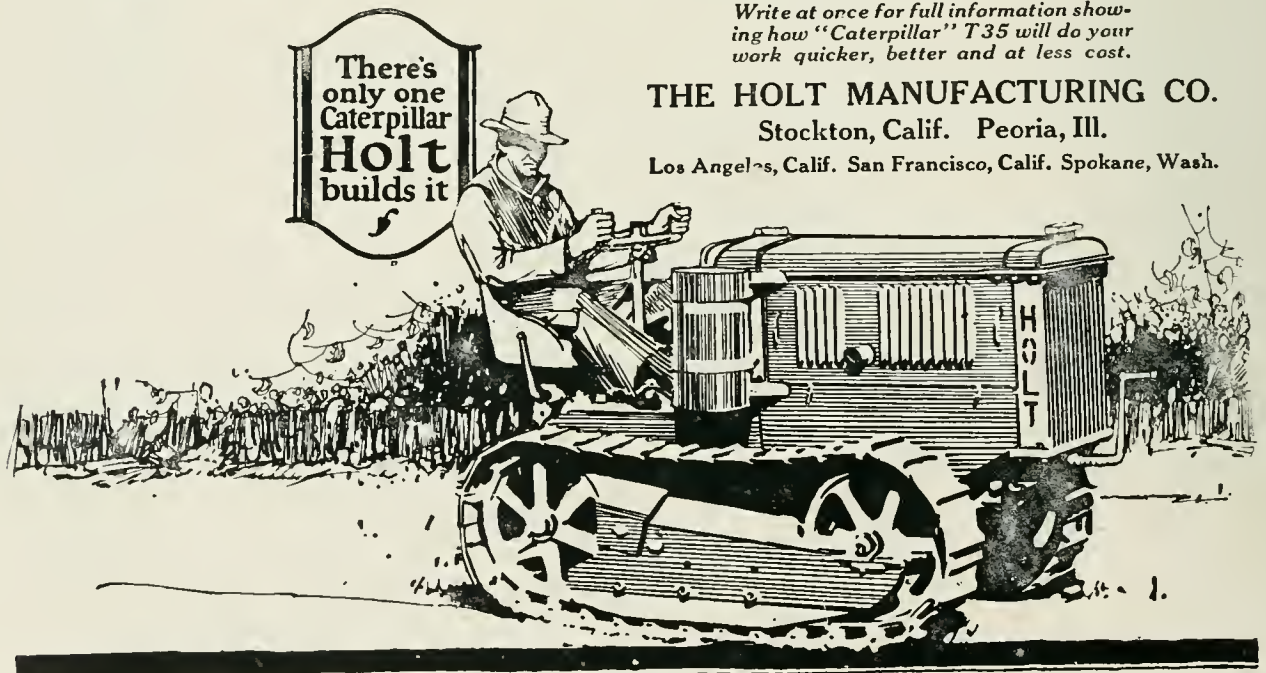
Like all “Caterpillar” Tractors it is built for service and backed by service, too. A factory and a service organization on the Pacific Coast assure you service anywhere, anytime.

Write at once for full information showing how “Caterpillar” T35 will do your work quicker, better and at less cost.

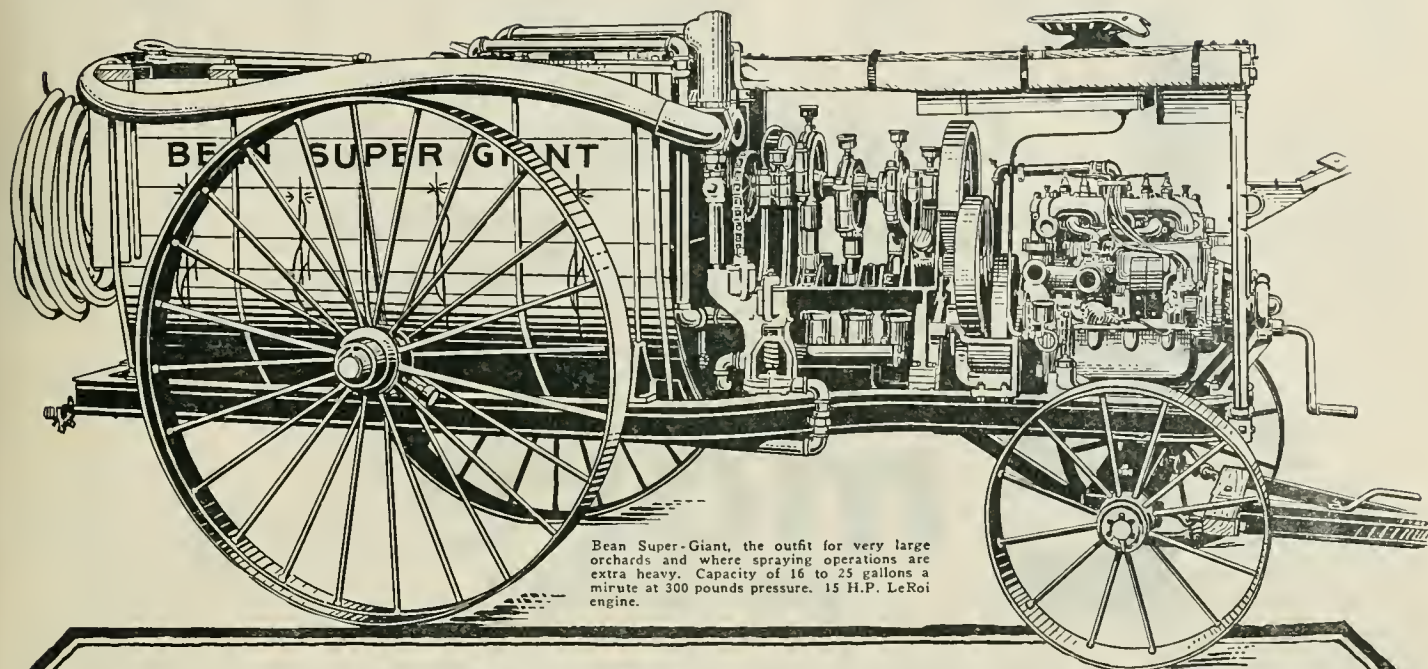
THE HOLT MANUFACTURING CO.

Stockton, Calif. Peoria, Ill.

Los Angeles, Calif. San Francisco, Calif. Spokane, Wash.



Oregon Representative, J. W. HILL, Henry Building, Portland, Oregon



Bean Super-Giant, the outfit for very large orchards and where spraying operations are extra heavy. Capacity of 16 to 25 gallons a minute at 300 pounds pressure. 15 H.P. LeRoi engine.

There's a "BEAN" for Every Grower

No matter how large or how small your orchard, there is a Bean Sprayer that will exactly meet your requirements—a power outfit that will completely and perfectly take care of your spraying needs. Illustrated on this page are three of the popular sizes. Our new catalog illustrates and describes a number of others.

If you're out for profits—

You Need a "Bean"

While retaining all the sturdy, dependable features which have made the Bean line famous, several important improvements have been made this year, including the Bean 6 H. P. engine, which is used on all our larger outfits with the exception of the Super-Giant, which has the LeRoi 15 H. P. engine. The Bean engine is the latest and best production of Mr. E. B. Cushman, noted as a designer of good engines.

Bean Troubleless Ball Valves

Bean Threadless Ball Valves can be opened up entirely and every part removed in less

than two minutes. This is done without lowering the pressure, stopping the engine, or drawing the liquid from the pump.

Porcelain-Lined Cylinders

Used on Bean Sprayers since 1886 and proven to be the correct solution to the problem of long-wearing cylinder lining. These cylinders never need replacing under three or four years, and we have known them to wear for fifteen.

The Bean Pressure Regulator

The biggest single feature of the Bean line. It holds the pressure exactly where you want it, saves fuel in the engine, and wear and tear on the pump, and is absolutely safe and dependable. Fully described in our new catalog.

One-Piece Steel Bedplate

The Bean is the only outfit built today with a steel bedplate made in one piece, without wood floor. Every bolt from the engine,

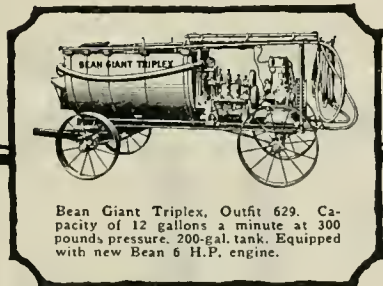
pump, and tank is secured to this frame, thus insuring the utmost rigidity. H. A. Watkins of Fruita, Colo., has just written us as follows: "I never knew my Bean to stop running when crossing creases as some others do. My rig runs absolutely without trouble."

Only Pump Without a Stuffing Box

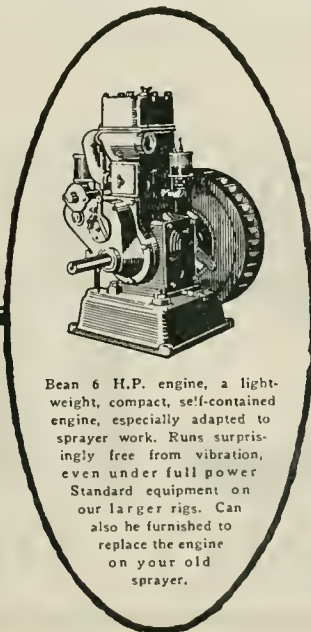
No stuffing box on a Bean pump, therefore no stuffing-box troubles. The cup-shaped molded plunger, an exclusive Bean feature, is held so close to the porcelain lining of the cylinder on the downstroke that no packing box is necessary. Less friction, too, on the upstroke.

Many Other Important Advantages

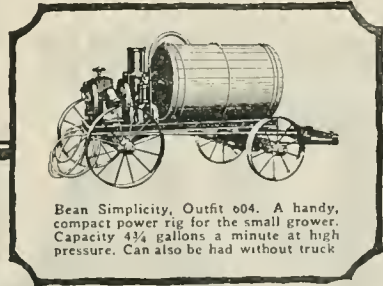
Get the new Bean Catalog, which illustrates and describes the entire Bean line from the mighty Bean Super-Giant, shown above, with its capacity of 16 to 25 gallons a minute at 300 pounds pressure right down to the little Bean Simplicity, the most popular little rig known to the fruit-growing world. Sign and send the coupon for your copy of the catalog.



Bean Giant Triplex, Outfit 629. Capacity of 12 gallons a minute at 300 pounds pressure. 200-gal. tank. Equipped with new Bean 6 H.P. engine.



Bean 6 H.P. engine, a light-weight, compact, self-contained engine, especially adapted to sprayer work. Runs surprisingly free from vibration, even under full power. Standard equipment on our larger rigs. Can also be furnished to replace the engine on your old sprayer.



Bean Simplicity, Outfit 604. A handy, compact power rig for the small grower. Capacity 4 1/4 gallons a minute at high pressure. Can also be had without truck

MANUFACTURED BY

BEAN SPRAY PUMP CO.

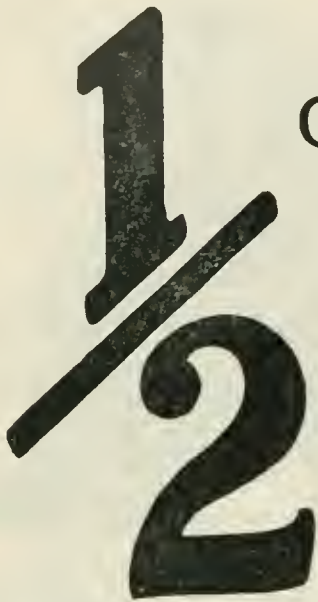
Originators of the first high pressure sprayer

118 W. Julian Street SAN JOSE, CALIFORNIA

BEAN SPRAY PUMP CO.
118 West Julian Street SAN JOSE, CALIFORNIA

Please send me a copy of the new Bean Catalog.

Name _____ Street _____
Town _____ State _____
Kind of Fruit _____ No. Acres _____


 A large, stylized graphic of the fraction 1/2, with the '1' and '2' being very thick and bold, and the slash being a simple diagonal line.

Good News for Farmers!

The Du Pont Company announces
a new farm dynamite—

2 more per dollar

DU PONT CHEMICAL ENGINEERS have developed a new dynamite, "Pacific Stumping"—and it will save you a lot of money. It will blow out $\frac{1}{2}$ more stumps per dollar—blast $\frac{1}{2}$ more boulders per dollar—plant $\frac{1}{2}$ more trees per dollar.

Standard stumping powders are packed 85 sticks to the case. For 50 cents more, you can buy a case containing 130 sticks of Pacific Stumping—each stick of which will do equal work with any other stumping powder. This means that Pacific Stumping costs you $2\frac{1}{2}$ cents (or 30%) less per stick.

This new dynamite makes stump blasting in the Northwest a far less expensive operation—and will undoubtedly make possible a great increase in land-clearing activities in this district.

See your local hardware or general store merchant now regarding your season's supply of Pacific Stumping Powder. Write us for booklet, "The Development of Logged-Off Lands," which gives full instructions for its use.

*Ask your County Agent
how the Federal Farm
Loan System will help
you clear your land.*

E. I. DU PONT DE NEMOURS & CO., Inc.

Spokane

Seattle

Portland

NON-HEADACHE

DU PONT

NON-FREEZING

PACIFIC

STUMPING POWDER

BETTER FRUIT

Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, FEBRUARY, 1922

NUMBER 8

What of the Use of Spreaders?

By A. L. LOVETT

Entomologist, Oregon Agricultural College Experiment Station

SOME of the more scientific phases of spraying have seemed, at best, a bit bewildering and there are few if any phases of the horticultural game in which changes have been more rapid or the kaleidoscope of improved practices has presented a more constantly varying aspect from year to year. As a grower has remarked and, no doubt, many others have thought, "just as we master the details of one new spray practice and begin to accept it as gospel, here comes another new wrinkle and the whole matter has to be threshed over again."

This avalanche of improved practices in spraying; improved combination sprays, improved technique in application, higher powered outfits, the spray guns, etc., is the most concrete and positive evidence of the importance of the subject and of the demand for more effectual and less expensive practices in spraying operations. To glance through a catalogue of sprayer equipment of twelve years ago or to peruse a spray bulletin of that period will impress one of the inadequacy of machinery and methods then pertaining.

How utterly futile it would be to attempt with such machinery the commercial orcharding of today with the pests it is now necessary to combat and the standard of excellence now demanded. Spraying is a costly operation; it is an exacting practice and all other things being equal, the grower who most nearly approaches the ideal in improved spray practices will achieve the highest degree of control at a minimum output of time and expense.

Necessarily, with new spray practices developing so rapidly, some must be still in the experimental stage; or where of proven merit for one section must needs require some modification to adjust them to maximum efficiency in another section.

The development of spreaders to be added to the poison spray solution for its physical improvement is one of the more recent improved practices. Yet, in spite of several years of fairly careful experimental evidence favorable to spreaders as a commercial orchard proposition, they are still

Orchard experts of the Pacific Northwest undoubtedly deserve credit for pioneering in the use of spray spreaders, and the writer of this article has been in the forefront in these investigations. It may be a long time, as Professor Lovett here indicates, before the last word on spreaders has been written. In the meantime painstaking investigations are each year leading the horticulturists nearer the basic fundamentals as to values and best types of spreaders. The facts relating to the Oregon tests and points wherein results differ in different sections are here set forth.

"on trial." Believing it a desirable thing to crystallize our present knowledge, practices, reactions and trend regarding spreaders, we have attempted in this article to summarize as far as possible this information.

HISTORICAL—The addition of materials to the poison spray solution to improve its physical properties is by no means new. Various materials including glue, molasses, soap, soap bark, gelatine, etc., have been used from time to time in more or less isolated cases for specific pests where the investigators appreciated the necessity for improving the "spread" of the poison solution.

Probably the first large scale investigation of spreaders for poison sprays, with a rather general application to the economic control of orchard pests, were those undertaken at the Oregon Experiment Station. The problem is still under investigation and surely the last word on spreaders has not yet been written. It is not worth while to review the investigation in detail. Among the really promising and practical substances tested as spreaders were: Calcium casenate, glue, gelatine, saponin, and oil emulsions. In considering their qualities as a spreader the following factors were necessarily taken

into account: Availability, (was the source of supply adequate); compatibility, (they must not react unfavorably with any ordinary spray material or combination of spray materials); efficacy, (in reasonable amounts they must actually give satisfactory results); ease of preparation (complicated formulæ, cooking, any operation requiring much close or additional work meets with little favor among our growers); the cost must be reasonable.

With these factors as the standards of excellence the casein spreader appeared the most promising. Oil emulsions are not such a poor second except that they are less fool-proof. If we could be sure our growers would handle an oil emulsion properly in all cases, it could become a close competitor, but the element of danger is too serious a risk for the general recommendation of oil.

CASEIN SPREADER—In the tests at the Experiment Station in the earlier field work ordinary commercial ground casein was employed. During the earlier commercial trials while growers "mixed their own," not all reports were favorable. The process in itself was subject to failure where any short cuts were attempted, then the casein available was variable in size of particles and in character.

Fisher of Washington, investigating the control of apple mildew, was also working with spreaders and recommended some modified formulæ and methods in preparation that were adopted in some cases. All told, the 1920 season may be summarized as one where the general idea of the use of spreaders gained ground rapidly, the use of spreaders but little.

With the opening of the season of 1921 some commercial companies had become interested and commercial casein spreaders appeared on the market. Of the powdered forms, which were by far in the majority, it may be said that in general they represented a high grade casein, ground somewhat finer than the ordinary commercial product and thoroughly mixed in definite proportions with hydrated lime. These

commercial materials combined all the essential factors desirable in the casein spreader and included to a most satisfactory degree the factor of ease in preparation, as it is possible to add the powdered spreader directly to the spray solution.

While interested primarily in the results and reactions resulting from the use of spreaders with poison spray solution, it might be well before taking up this phase of the discussion to mention some other uses to which this product has been put in orchard spraying operations.

Fisher, of Wenatchee, Washington, finds the casein spreader (modified formula) a desirable and effective addition to the lime sulphur spray for brown rot of prunes and cherries and for mildew control in apples.

Jones, of California, finds the casein spreader a most satisfactory and desirable substitute for glue in their lime-sulphur, oil and glue and B. T. S., oil and glue formulæ in their citrus spraying in Tulare county.

DeOng, of the California Experiment Station, favors strongly the addition of this spreader to lime-sulfur for red spider control.

It has been added and found to improve the sulfur sprays for red spiders, where the dry sulfur and casenate are mixed and then made into a paste and finally diluted with water. In whitewashes for trees it may be substitute for glue in their lime-sulfur, oil miscellaneous materials, giving an excellent covering and adherence to the whitewash.

SPREADERS IN ARSENATE SPRAYS—And now finally what is the status of spreaders in our general orchard spray program for codling moth control? There are a number of points to consider:

First—Does the addition of a casein spreader increase the efficiency of the poison spray in worm control?

Earlier investigations under rather carefully conducted controls at the Oregon Station indicated a fairly marked increase in the percentage of control obtained where spreaders were added to the poison spray solution. During the past two seasons results have been more variable, and certainly less conclusively in favor of the spreaders.

Reports from California are conflicting, some feeling that decidedly better results are obtained, others finding little evidence of improved control. DeOng, reporting on an arsenate foliage spray for red humped caterpillars, reports superior control where casein spreader was employed.

In the Wenatchee section of Washington there is a general impression that spreaders improve the efficiency of the spray. In the Yakima section less spreaders have been used and there is a general sentiment to the effect that spreaders do not improve the killing efficiency.

In the Twin Falls section of Idaho spreaders were quite generally employed and their use has received a most hearty indorsement from the growers. It would seem that they are enthusiastically united in the

opinion that spreaders materially increased the killing efficiency. Where spreaders have been used in Oregon there is a general feeling that the control has been improved. However, recent investigational plats do not bear this out in any striking detail.

SUMMARIZED, we may say that while there is much evidence to indicate that the addition of a spreader to the poison spray solution increases its killing efficiency, it is decidedly doubtful as to what extent this is true. It is our opinion that the value of a spreader in this regard will be, to a considerable extent, in proportion to the efficiency of the spray outfit; the excellence of the spray technique and the judgment in proper timing of the spray operation. Where any or all of these are faulty the value of the spreader increases. There is certainly no evidence to substantiate the report from the east that the addition of the casenate spreader decreases the efficiency of the spray.

Second—Does the spreader improve the spread of the spray?

All reports are agreed that, with the addition of a spreader, one obtains smoother, less conspicuous and a more even distribution of the spray. This accomplishes two outstanding results of merit. The even inconspicuous covering renders the fruit less likely to unfavorable suspicion regarding spray covering and makes wiping unnecessary in many instances. By avoiding the heavy blotchy covering of spray the red varieties color up more evenly, improving the appearance and grade of the mature fruit materially.

This factor of a smooth inconspicuous covering, thus avoiding the blotchy deposit and resultant uneven coloring is really important and to many growers serves as a good and sufficient reason for the enthusi-

astic adoption of spreaders in their late summer applications.

Third—Does the addition of a spreader increase the covering power of the spray solution so more trees may be covered per tank of spray?

Some growers have checked on this point fairly carefully and are convinced that there is a material increase in the number of trees one may cover with a tank of spray where spreader is added. Many have not checked on this and a note of warning on the point is worthy of thoughtful consideration. It would be a most unfortunate situation if the grower, imbued with this idea of quicker covering with less material, actually failed to use sufficient time or solution on the tree to obtain the thorough spray covering required.

So, while it is conceivable that by increased wetting due to the spreader we could get quicker covering, this should not become a factor of first importance when deciding for or against the spreader

Fourth—Are spreaders advisable with all arsenical applications?

The consensus of opinion seems to be that spreaders should be used with all the lead arsenate applications from calyx or pink to the last cover spray. Considered strictly from a comparative point of view and valued on the beneficial results one might logically expect from its use, it would appear that the spreader in the solution could be dispensed with in the earlier applications if desired, but is of especial merit in the late cover spray.

Fifth—Should casein spreaders be used with other materials and at other seasons in spray applications?

No careful experiments have been made at the Oregon Station with spreaders except with the poison sprays.

(Continued on page 26)



Application of spray being made in orchard of Stewart Bros., near Victoria, B. C. with modern spray gun.

Control of Anthracnose, or Black Spot Canker

By E. W. WHITE

District Horticulturist, Department of Agriculture, Victoria, B. C.

It is a pleasure to present such an array of substantial, concrete data as are given by Professor White in this paper, on the control of one of the most troublesome apple-tree diseases our readers encounter. It is the substance of an address given last summer at a conference of horticulturists at Hood River, and delayed in submission to us. No little value is added through inclusion of detailed figures on spraying costs. As a whole, the article is so meaty the hand that might have cut it to considerably shorter length was stayed, and the report is given in full.

APPLE-TREE anthracnose, or black spot cancer, is prevalent in practically all apple orchards of the coast districts of Oregon, Washington and British Columbia, where control measures are not regularly adopted. It is perhaps the most serious fungus disease with which the coast fruit grower has to deal and, during the past twenty-five or thirty years, has caused the destruction of a great number of apple trees with corresponding financial loss.

It is not the intention in this paper to discuss the origin or life history of this disease or the proper scientific name by which it should be known, but rather to give briefly the results of five years' experimental work in the control of this trouble, carried out in the Keating district near Victoria, Vancouver Island, B. C.

In past years the general recommendation given to our growers for the control of this disease was to spray with double strength Bordeaux (8-8-40) as soon as the fruit was picked and before the fall rains commenced. Where this system of spraying was followed out very efficient results were obtained, especially on early varieties of apples. Even on late varieties, in a good many cases, the disease was held in check where the spraying was done thoroughly.

The trouble with this control measure, however, was not due to the inefficiency of the spray, but to the fact that the harvesting period is always a busy time for fruit growers and in the majority of cases early varieties were not sprayed when the fruit was harvested, and by the time the late apples were picked the wet weather had set in and it was often very difficult to get a fine day on which to do the spraying. In consequence infection took place and each year more dead wood could be found in the orchards.

Our growers were becoming discouraged

in their efforts to control the disease and were claiming that it could not be done economically and efficiently.

Consequently in the fall of 1916 the Horticultural Branch, in co-operation with J. W. Eastham, provincial plant pathologist, decided to do some experimental or perhaps better, some demonstration spraying.

In outlining the work we were very grateful for information relative to the success achieved in controlling the disease by Leroy Childs, director of the Hood River Experiment Station, by combining a Bordeaux spray with the last codling moth spray.

It was confidently felt that the disease could be controlled on early apples and for that reason a late variety was chosen with which to work. A block of 36 twenty-year-old Baldwin trees was selected in the orchard of Tanner Bros. Keating. These trees were very badly diseased and the owners had threatened to cut them out on numerous occasions. In fact, the disease was so bad that practically every bit of new wood which grew each year would be girdled by the canker the following spring. Nothing but the bare framework of the tree and innumerable dead shoots were left to constitute the tree. In 1916 the trees were carrying a very light crop of fruit, it being the off-year for bearing.

In planning to apply a weak Bordeaux early, while the fruit was still on the tree, it was thought that it would be necessary to wipe the fruit before marketing, but this was found to be unnecessary.

THE block of trees was laid out in four plots, the first nine trees in each row constituting Plots 1, 2, and 3, and the last three trees in each row constituting Plot 4, or check-plot. Plot 1 received only an early spray of weak Bordeaux, 3-4-40. Plot 2 received an early and late spray of weak Bordeaux, 3-4-40 and strong Bordeaux, 6-6-40. Plot 3 received only the late spray of strong Bordeaux, 6-6-40. Plot 4 was check-plot and received nothing.

In 1916 the first spray of 3-4-40 Bordeaux was applied on September 6, after a very dry summer, to Plots 1 and 2, constituting 18 trees; 80 gallons of spray mixture was used, averaging 4.44 gallons per tree.

The cost of materials and application for the first spraying was as follows:

6 lbs. Copper Sulphate at .10.....	\$.60
8 lbs. Lime at .02.....	.16
2 nozzle-men, 1 hour at .25 each.....	.50
Man and team, 1 hour at \$4.00 per day..	.50

Total Cost....\$1.76

Cost per tree, first application...9.77 cents

Following the application on September 6, the dry spell continued and practically

not a drop of rain fell up to the time the apples were harvested about October 21. In consequence of this there was a heavy coating of Bordeaux still adhering to the fruit when it was picked. The dry weather also caused a shortage of water and we were unable to carry out our original plan of putting on the second application as soon as the fruit was picked.

Rain began to fall on October 25 and continued intermittently until November 8. On this date the weather was favorable and the second spray of 6-6-40 Bordeaux was applied to Plots 2 and 3. Eighty gallons of mixture was made up and there was sufficient to spray 4 trees besides the 18 in Plots 2, and 3, so that the average number of gallons per tree were 3.63.

The cost of material and application for the second spraying was as follows:

12 lbs. Copper Sulphate at .10.....	\$1.20
12 lbs. Lime at .02.....	.24
2 nozzle-men, 1 hour at .25.....	.50
Man and team, 1 hour at \$4.00 per day...	.50

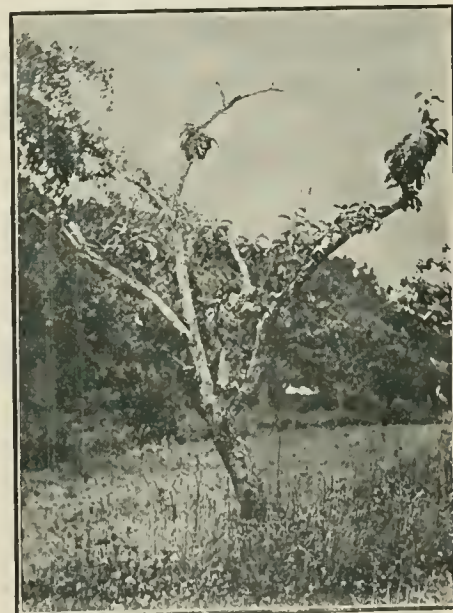
Total Cost....\$2.44

Cost per tree, second application...11.09 cents

In both sprayings and in the following sprayings a Bean Giant Triplex power sprayer was used and a pressure between 180-200 lbs. was maintained. The long-distance Friend nozzle was used in all sprayings.

STORING AND PACKING OF SPRAYED APPLES, 1916—After the apples were picked on October 21 they were placed in orchard boxes in ordinary shed storage and held until the first week in February, 1917. They were then packed and sold

(Continued on page 21)



Apple tree in British Columbia orchard, showing damage done by anthracnose, also cankers on trunk and branches

Orchard Spray Program for 1922

By H. P. BARSS and A. L. LOVETT

THE orchard man must fight for his crop against a considerable number of pests and diseases that are always on the job, and it is a fact, demonstrated every season, that the fruit grower cannot win in this fight unless he is likewise everlastingly on the job. His orchard enemies are fiendishly efficient, taking advantage of every opportunity offered to make their attack, and it is necessary to plan the spray campaign with the greatest care and execute it effectively so as to head off every thrust of the opponent.

The spraying program is a program of prevention. It aims to prevent the activities of these orchard pests and diseases almost entirely by covering the fruit, leaves or frame-work of the tree with a material poisonous to them, so they will have no avenue of entry. Failure is due in many instances, to lack of understanding of the proper weapon to employ and the proper time to employ it.

A spray calendar, such as the one appearing here, is intended as an aid to the grower in these particulars, but there are a few pointers that may be added as aids to complete effectiveness.

IRON SULFATE AS INDICATOR—With the dilute lime-sulfur sprays it is rather difficult to determine just how thoroughly the foliage is being covered or the fineness of the droplets reaching the tree. By adding iron sulfate at the rate of half a pound, dissolved in water, for each gallon of concentrated lime-sulfur used, the spray is turned black without the effectiveness being destroyed and the operator can tell at a glance just how well his work is being done. Many growers use this method in the scab sprays with satisfying results.

AMOUNT OF SPRAY REQUIRED—It takes a certain amount of spray to give satisfactory protection to a tree. LeRoy Childs, of the Hood River Branch Experiment Station, has determined by a survey of some of the best orchards in his section that it takes, on the average, about 4 gallons of spray to cover a healthy eleven-year-old tree and about seven gallons for a seventeen-year-old apple tree.

If the apple grower will figure up his spray tank average for last season he can determine whether he was using a safe amount per tree. One must always remember that it is just as important to cover the leaves, upper side and lower side, as it is to cover the fruit, for clean fruit is an impossibility in a tree filled with scab spots on the foliage.

THE TREE TOP—The average orchard will show more scab and worms in the tops of the trees than in the portions more easily reached by the sprayer. More thorough covering of the tops will repay

many times over the extra exertion and skill required.

SPRAY GUNS—The spray gun is a great time and labor saver, but must have sufficient power behind it if it is to equal the results secured by the old spray rod equipment. Furthermore no little skill is required to sweep the spray thoroughly through the tree from top to toe without missing some of the branches, drenching others, or actually causing injury to the surface of the fruit and to the foliage by the force of the powerful, direct drive of the coarse adjustment of the gun.

DRY LIME-SULFUR—Dry lime-sulfur is now being used by a good many fruit growers in place of the usual liquid lime-sulfur, on account of its greater conveni-



Time for the delayed dormant spray for scab, mildew and aphids. Should never be omitted in commercial orchards.

ence in handling and storing. When it is used in strengths sufficient to give the dilute solution practically the same equivalent strength as the usual dilutions of liquid lime-sulfur, the results seem to be equal to the latter.

Chemical analysis indicates that it takes about four pounds of dry lime-sulfur to equal the sulfur content of a gallon of commercial liquid lime-sulfur of 32 degrees Baume test. The Experiment Station still feels that the grower is taking some risk in using the dry material at dilutions very much under those called for by the usual spray schedule.

Notes on Spray Calendar

DORMANT SPRAY—The blister mite spray (pear) and the twig miner spray (prune and peach). It is effective for scale.

It is seldom advisable to omit this application on pears and, with the advent of blister mite in the apple orchard, it is equally important there. There is too

much blister mite injury in most of our fruit sections, warranting more serious consideration of the timeliness and thoroughness of this application.

Generally speaking, this spray cannot be safely omitted on prunes, because the twig miner is generally present and frequently wreaks serious havoc in unsprayed trees.

In the absence of these pests spraying for San Jose scale and red spider mites may be deferred until the delayed dormant stage, but in such cases the strength of lime-sulfur should be increased to the dormant strength of 12-100.

Oil sprays may be substituted for the standard lime-sulfur applications only for the control of scale and leaf-roller. For best results from the use of oil sprays it is essential that several days of settled weather follow the application.

The ideal time for the application of the dormant spray is about the middle of February if suitable weather for spraying occurs then. This application is not effective for the control of our principal fungous diseases, although peach leaf curl may be often checked considerably if it is not delayed too long. For this disease earlier winter spraying with Bordeaux is safer.

DELAYED DORMANT SPRAY, APPLE AND PEAR—The first scab spray, the aphid spray.

In Western Oregon satisfactory scab and mildew control cannot be expected where this application is omitted, poorly timed or indifferently done. Much mildew damage on the fruit starts at this early stage and scab gets under way promptly after the winter buds burst. Mildewed twigs should be pruned out during the winter. The old fallen pear and apple leaves should be turned under before this time since they are responsible for carrying the scab over from the previous season and, in most orchards, considerable benefit in scab control will result from this practice.

For apples, the addition of nicotine (Black Leaf 40) is advisable at this time for aphid control.

PINK SPRAY, APPLE AND PEAR—The second scab spray required to afford protection during bloom. Important for mildew control.

Where fruit worm injury to mature fruit was apparent last season lead arsenate should be added, excellent control being possible from this application.

PRE-BLOSSOM SPRAY, PRUNE, PLUM AND CHERRY—On stone fruits this spray is required only where blossom blight, due to the grown rot fungus, is troublesome, or where bud moths and aphids were prevalent the previous season and measures for their control are advisable.

FIRST FRUIT SPRAY, STONE FRUITS—For Syneta beetle, leaf-spot of prune and cherry, peach blight and mildew.

In orchards where the white Syneta beetle is present, and in such numbers as to result in serious injury, lead arsenate should be used for their control in this application, but because there is an element of danger in the use of regular commercial lead arsenate on stone fruits, it is advisable to add to each 100 gallons of spray 2 pounds of rock lime, carefully slaked and strained or an equal amount of hydrated lime.

Where peach blight and mildew are troublesome this spray should always be applied until under good control.

CALYX SPRAY, APPLE AND PEAR—For scab and, on apples, the first codling moth spray, and is very important.

The addition of lead arsenate is generally advisable even on pears as an aid in controlling late fruit worms, bud moth and similar foliage and fruit eating caterpillars. This spray is an aid in keeping mildew infections off new foliage.

Where orchard trees are not in vigorous condition due to lack of proper cultivation, soil fertility or good root conditions, growers often meet with spray injury from the lime-sulfur at ordinary dilutions applied at about this time, particularly where earlier lime-sulfur sprays have not been applied according to schedule. This is apparently worse some seasons than others due to climatic variations.

FIFTEEN DAY SPRAY, APPLE AND PEAR—Required in sections where scab is abundant. Cannot safely be omitted in the Willamette Valley.

Where slugs have skeletonized the pear foliage the previous year these pests may be checked by adding lead arsenate in this application.

THIRTY DAY SPRAY, APPLE AND PEAR—An important codling moth application, for which proper timing is essential. It is applied at the time the moths are depositing eggs for the first brood worms. The exact time for this spray will vary with the season. If possible, a specialist should be consulted, or the grower should inform himself in regard to the essentials in timing the application.

On scab susceptible varieties this spray can seldom be omitted in Western Oregon without danger. Where spray burn on fruit is feared, Atomic Sulfur or self-boiled lime-sulfur may be substituted for the ordinary lime-sulfur. On varieties little subject to scab this spray may often be omitted if the previous sprays have been carefully applied.

JULY AND AUGUST SPRAYS, APPLE AND PEAR—Applied for the second generation of the codling moth.

The exact time for best results from these applications is variable and best determined by specialists or from breeding cage records. Occasionally the late August application may be omitted on pears, but conditions vary so much with seasons and dis-

SPRAY PROGRAM FOR APPLES AND PEARS		
Application	Time Applied	Pest or Disease and Materials to Use
1. Dormant Spray	As winter buds are swelling and before they open.	For San Jose Scale, Blister Mite, and Red Spider Mites: Use lime-sulfur, 9-100 or, for scale, miscible oil, 8-100. For Leaf Roller (A): Use miscible oil, 8-100.
2. Delayed Dormant Spray	Cluster buds separating just enough to expose blossom buds.	For Scab and Mildew: Use lime-sulfur, 3½-100. For Aphids (A): Use nicotine, ¾ pound to 100.
3. Pink or pre-blossom spray	When the blossom buds are well separated in the cluster. Just before opening.	For Scab and Mildew: Use lime-sulfur, 2½-100. For Fruit Worms (P) and Bud Moth: Add lead arsenate, 2-100.
4. Calyx Spray	As last petals are falling. Before apple calyx closes on central fruit in cluster.	For Scab and Mildew (A): Use lime-sulfur, 2½-100. For Codling Moth (A): Add lead arsenate, 2-100. For Fruit Worms (P): Add lead arsenate, 2-100.
5. Fifteen-day Spray	About fifteen days after calyx application.	For Scab and Mildew (A): Use lime-sulfur, 2-100 (or self-boiled lime-sulfur, 8-8-50 if burning is feared.) For Pear-slug: Add lead arsenate, 1½-100.
6. Thirty-day Spray	Four or five weeks after the calyx application.	For Codling Moth: Use lead arsenate, 1½-100. For Scab* and Mildew (A): Include lime-sulfur, 2-100 (or self-boiled lime-sulfur, 8-8-50, where burning is feared.)
7. July Spray	July 10 to 25, depending on locality and season	For Codling Moth (second generation): Use lead arsenate, 2-100.
8. August Spray	August 10 to September 5, depending on the season and locality.	For Codling Moth: Use lead arsenate, 2-100.
9. Full Spray (Apple)	Late October or immediately after the fruit is picked.	For Anthracnose (A): Use Bordeaux, 6-6-50. (Where anthracnose is bad add Bordeaux 4-4-50 to July or August spray.)

(A) Where pest or treatment refers only to apple or only to pear this is so indicated, by the letter (A) for apple or (P) for pear, immediately following the pest or treatment.

*With d'Anjou, Howell, Comice and other tender-skinned varieties of pears and with apples susceptible to burn or russetting from regular lime-sulfur, substitute Atomic Sulfur, 12-100, or the self-boiled lime-sulfur.

SPRAY PROGRAM FOR PRUNES AND PLUMS		
Application	Time Applied	Pest or Disease and Materials to Use
1. Dormant Spray	Just as the winter buds are opening.	For San Jose Scale, Red Spider Mites and Twig Miner: Use lime-sulfur, 9-100. For Brown Rot Blossom Blight: Use Bordeaux, 4-4-50 with spreader, or lime-sulfur, 3½-100. For Bud Moth: Add lead arsenate, 2-100+lime 2 pounds. For Aphids: Add nicotine, 1-1200.
2. Pre-blossom Spray	When the blossom buds are showing white, just before opening.	For Leaf Spot: Use Bordeaux, 4-4-50, or self-boiled lime-sulfur, 8-8-50, with spreader. For Syenta: Add lead arsenate, 2-100+lime 2 pounds. For Leaf Spot (Beneficial for Brown Rot also): Use Bordeaux, 4-4-50, or self-boiled lime-sulfur, 8-8-50, with spreader.
3. First Fruit Spray	As soon as the "shucks" or calyx parts are off the fruit.	For Leaf Spot (Beneficial for Brown Rot also): Use same materials as in preceding.
4. June Spray	About June first.	For Brown Rot: Use Bordeaux, 4-4-50, or self-boiled lime-sulfur, 8-8-50. Add spreader.
5. July Spray	About July first.	
6. August Spray	About one month before picking time.	

SPRAY PROGRAM FOR PEACHES		
Application	Time Applied	Pest or Disease and Materials to Use
1. Leaf Curl Spray	From December to mid-February.	For Peach Leaf Curl: Use Bordeaux 6-6-50.
2. Late Dormant Spray	Just as the first buds are ready to open.	For Peach Twig Miner, San Jose Scale, Red Spider Mite: Use lime-sulfur, 9-100. (If Scale is absent dilute 8-100.) For Aphids: Add nicotine, 1-1200. For Bud Moth: Add lead arsenate, 2-100+lime 2 pounds.
3. First Fruit Spray	Just after the "shucks" or calyx parts fall off.	For Peach Blight and Mildew on Fruit and Leaves Use self-boiled lime-sulfur, 8-8-50. If bad repeat in 2 or 3 weeks.
4. Early Fall Spray	As soon as the fruit is picked.	For Peach Blight, Twig and Bud Infections: Use Bordeaux, 4-4-50.

tricts that no uniform recommendations are possible. In case of doubt "keep the fruit covered with spray."

Where anthracnose has a bad hold in the apple orchard a Bordeaux spray should be
(Continued on page 27)

Treatment of Winter Injured Trees

By PROFESSOR W. S. BROWN

Chief in Horticulture, Oregon Agricultural College

In the December number was presented a comprehensive survey and discussion of tree injuries sustained by northwestern orchards and nut groves in the cold snap of two seasons ago, written by Professor D. F. Fisher. Here is the timely and logical follow-up treatment of such winter injuries, prepared by the chief in horticulture at Oregon Agricultural College. One of the highly valuable features of this paper, a contribution to the present fund of knowledge and practice, will be found in the advice given on types of wound coverings.

IT IS NOTHING unusual for young fruit trees to have their bark split open and rolled back during the winter season. This may be brought about by the warm, sunny days of February, followed by crisp, frosty nights. The results are often very serious to the trees because the trees frequently have much of the bark destroyed, thus shutting off the food supply running from the branches to the roots, and also allowing heart rot organisms to gain possession of the exposed wood.

Nothing within recent years, however, has equalled the extreme cold period during December, 1919, which killed so many of our fruit trees outright and which severely injured many others. The trees that are dead and those most severely injured will, undoubtedly, be pulled in course of time. Others less seriously injured may live for many years provided they are properly handled. On the other hand, they may die in a very short time if neglected.

The treatment we give these trees should accomplish at least two ends: First, it should prevent heart rot organisms from entering the wood of injured trees; second, it should bring about the healing over of the exposed wood by the bark, as soon as possible.

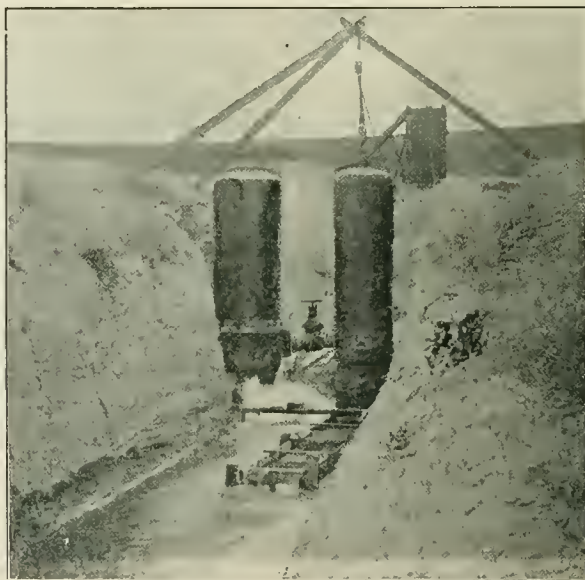
BRIDGE GRAFTING—On trees where much of the bark is still in good condition above and below the wounded surface, and where the wound is not too long, bridge grafting may be resorted to. When limbs have been affected severely at their bases, or when the tree trunks have been almost girdled the entire length, bridge grafting becomes very expensive and is seldom helpful enough to make the process worth while. The greatest danger in bridge grafting lies in the fact that heart rot may find entrance to the exposed portions of the wood and cause the tree to be short lived, even though the grafts may take.

DESCRIPTION OF BRIDGE GRAFTING—Bridge grafting is not a complicated matter,

though the work must be carefully done. Scions cut from any variety of apple will do. They must be cut during the dormant season and be kept in a cool, rather moist place until grafting is done. The scion stick should be from last year's wood growth, and should be about the size of a lead pencil or a little larger. When it is desired to keep these scions for some little time it is best to wrap them in moist sphagnum moss or slightly moist sawdust until time for grafting.

SETTING THE GRAFT—The bark on the tree must be cut back until good live bark is reached. The edges of this live bark are cut regularly and smoothly. A scion is then taken, sharpened at one end into a thin wedge-shaped stick, and inserted under the edge of the bark, usually on the lower side of the wound. Before inserting the scion, it will be necessary to make a vertical cut an inch or thereabouts in length into the edge of the good bark
(Continued on page 19)

Irrigation With Hydraulic Ram



Double installation of 10-inch and 12-inch rams, installed in 1915 and still lifting water 140 feet on the ranch of Fred R. Hawn, Grandview, Wash.

THERE are many section and locations in the Pacific Northwest where the feasibility of using one of these remarkable water-lifting devices known as the hydraulic ram, as a means of putting water where it is needed for irrigation or other purpose, is too often overlooked.

The principle of the hydraulic ram has been known for more than 200 years and the device has been used extensively for such purposes as procuring water for household and domestic needs. Its adaptation to irrigation problems has been worked out only in recent years.

Engineers of the Pacific Northwest have done considerable pioneering in this field. Recognizing the many advantages of this economical means of delivering water in quantity sufficient for extensive irrigation, they have developed the ram of large size. They have succeeded in perfecting rams in sizes up to 24 inches and capable of

delivering as much as 3,600,000 gallons per day.

Wherever a running stream, flowing well or other water supply exists, from which a slight fall may be obtained to furnish the power head, a ram may be successfully installed. It is possible for one of these machines to make running water lift a considerable portion of its flow to any height, up to 30 times that of the fall in the supply pipe.

Economy of operation is a factor highly in favor of the hydraulic ram. It requires no fuel or expensive current to run it. No engineer is required to keep it going. Once started the action is continuous and automatic. It does the work of both a motor and a pump. It needs no oiling and is so simple in construction as to require practically no repairs or adjustments.

The orchardist who is contemplating installation of a new system of irrigation,

or changing or supplementing of his present system, owes to himself to study the possibilities of the hydraulic ram. From the manufacturers he may obtain complete instructions on how to determine the feasibility of the mechanism or the size that may be required.

In the regions of extensive rainfall here in the Northwest, where streams abound, and even where there are only ditches and springs, there are innumerable locations where a ram might be easily installed. There are, adjacent to these supply sources,

any number of orchardists and gardeners who would like to do more or less irrigating. Or they may need power to pump water from some present supply. This little article should suggest the wisdom of investigating uses of this efficient combination power-pumping mechanism.

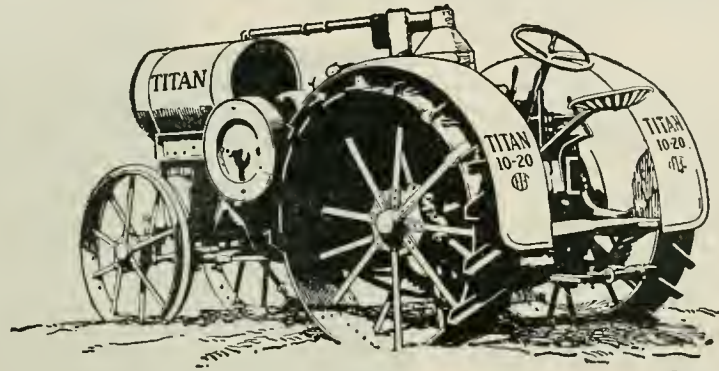
These International Machines, Requiring Power at Drawbar or Belt, are Built to Work Right with Tractors:

BELT

- Threshers
- Baling Presses
- Feed Grinders
- Corn Shellers
- Ensilage Cutters
- Huskers and Shredders
- Huskers and Silo Fillers
- Cane Mills
- Stone Burr Mills

DRAWBAR

- Grain Binders
- Harvester-Threshers
- Headers
- Push Binders
- Mowers
- Grain Drills
- Corn Binders
- Corn Pickers
- Plows
- Disk Harrows
- Spring-Tooth Harrows
- Peg-Tooth Harrows
- Field Cultivators
- Culti-Packers
- Manure Spreaders
- Wagons



Why Are the Most Successful Farmers Using International Harvester Equipment?

MORE than 100,000 farmers who have decided in favor of International Harvester tractors have been guided by the same impulses.

They knew that, because of its 90-year contact with farming problems, the International Harvester Company was in better position than any other company to design and build long-lived, practical farm tractors.

They knew that in the International Harvester line they could find both tractors and machines which were designed to work together as field units.

They were absolutely sure that the most practical and helpful service would be quickly and easily and forever available to them. Many years' experience with the International Harvester Company had convinced them that nowhere else could they find a line of power farming equipment so closely backed by satisfactory service.

They knew that these factors would guarantee their investments for years of usefulness. Year after year the wisdom of Titan-International Tractor ownership grows more apparent.

Let the judgment of these 100,000 farmers help you. For belt work now and for drawbar work in the spring, follow their advice. Use International equipment. Remember that both Titan 10-20 and International 8-16 now sell for \$900—lowest prices ever quoted on these tractors with their present equipment.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA (INCORPORATED) U S A

92 Branches and 15,000 Dealers in the United States

New Grading Rules

GROWERS and shippers of the Northwest will be interested in learning of the changes in grading rules on apples which are to be put into effect in Washington as result of action taken at the state grade and pack conference, held at Spokane in December. At the time the conference adopted the new rules Charles L. Robinson, state supervisor of horticulture, announced that they will be accepted by his department.

The revised standards are as follows:

"Extra fancy, or first grade, apples are defined as mature, clean, smooth, hand-picked, well-formed apples only, free from all insect pests, diseases, bruises and holes, spray burns, limb rub, visible water core, skin punctures or skin broken at the stem, and shall be free from russeting except that russeting within the basin of the stem shall be permitted.

"Fancy, or second grade apples, are defined as apples complying with the standard of extra fancy grade except that leaf rubs, slight scratches and russeting be permitted up to 10 per cent of the surface of the apple; provided that slight limb rub not to exceed one-half inch in diameter or scab spots not larger than one-quarter inch in diameter in the aggregate shall be permitted; provided further, that two healed-over worm stings on apples carrying color requirements characteristic of the variety shall be permitted in this grade.

"C grade, or third grade apples, are defined as all those free from infection, soft bruises and broken skin; provided that this grade may include healed-over stings and scab spots not to exceed one-half inch in diameter in the aggregate.

"Extra fancy color requirements shall remain the same as the 1921 except that there shall be no color requirements on green and yellow varieties; that MacIntosh Red and Kraign Spitz be changed from

solid red to striped red varieties, and the Winter Bananas from the green and yellow varieties to the red-checked or blushed variety; that color requirements for fancy grade remain the same as in 1921 except that there be no color requirements on red-checked or blushed varieties and on green and yellow varieties; that the C grade shall have no color requirements and that tolerance be increased from 5 per cent to 10 per cent.

"Scald, decay and other defects developing in fruit after packing shall be defined as applying to condition rather than grade; provided, that satisfactory evidence be presented to show that such defects were not evident at the time of packing."

The standard depth of the tin top pack for prunes was placed at 4¼ inches and the standard depth for suitcase pack placed at 3¼ inches.

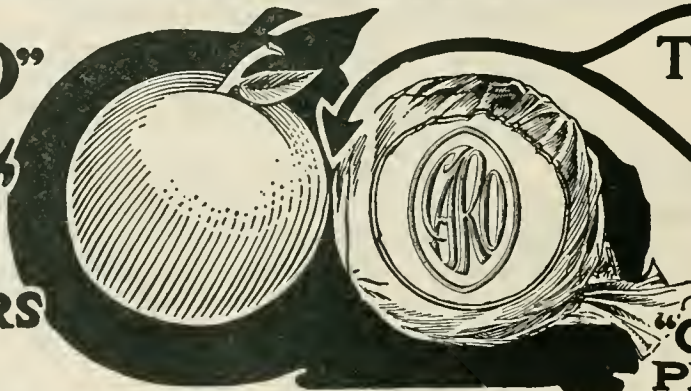


Now is the time to order your Kimball Cultivator for SPRING WORK

The Greatest Weed Eradicator Ever Made
W. A. JOHNSTON, Manufacturer, The Dalles, Oregon

"CARO"
fruit

WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Friend Sprayers

- Five Sizes
- High Pressure
- Cause less trouble
- Cost less to operate
- Give real satisfaction

Distributed in the Northwest by

Hood River Spray Co.

Hood River, Oregon



T. J. POUPART

(John Poupart, William Ravenhill)

Covent Garden, London, W. C. 2

REGISTERED



TRADE MARK

The Largest Firm of Fruit Salesmen in Great Britain

(ESTABLISHED OVER A QUARTER OF A CENTURY)

SALES BY PRIVATE TREATY ONLY (Gives best results)

COMMISSION THE EXCLUSIVE BASIS (Purchase propositions cannot be considered)

ADVANCES OFFERED TO COVER FREIGHT CHARGES

Special Facilities for Handling Consignments from Co-operative and Other Organizations

Cables
POUPART,
LONDON
Codes
A B C
(5th Edition)
Marconi
International

Bankers
Merchants Bank of
Canada
Bank of Nova
Scotia, Etc.

SPECIAL NOTICE
We have now opened a branch at Liverpool which will be conducted on the same lines as London. Growers can communicate direct with the manager,
T. J. POUPART
54 Stanley St.
LIVERPOOL

We are pleased to announce that we have opened Pacific Coast offices, Mr. Sam Birch in charge at 807 Wilcox Bldg., Portland Oregon. Phone, Broadway 5462. Mr. Birch will be pleased to give full information regarding the Poupart service.

Members of



Cherry Growing in Yakima Valley

By LUKE POWELL

Consulting Horticulturist, Yakima, Washington

THE GROWING of cherries in the Yakima Valley is no longer an experiment, but one of the most profitable branches of the fruit industry. But in all lines of fruit growing one has to observe the essentials in order to be successful. And like the Ten Commandments, each must be kept, as neglecting of one will bring to naught all the time, labor and money spent on the others.

ESSENTIALS—(a) Proper rootstock (b) soil and moisture; (c) pruning; (d) varieties; (e) cross pollination; (f) protection.

ROOTSTOCK—We have two rootstocks on which cherries are budded and grown. The Mazzard for the sweet cherry and the Mahaleb for the sour cherry. The former is a very rapid grower and so is the sweet cherry; while the latter is a slow grower as, likewise, is the sour cherry. Thus, in each case they are naturally adapted to each other. If the sweet cherry is grown on the Mahaleb, or sour cherry root, and permitted to make a vigorous growth, this will continue for three or four years and then suddenly the tree will die, usually in June or July. The top or tree has simply grown too fast for the root. The latter, not being able to supply the amount of nourishment required by the tree, they

both die and three or four years' work is lost.

Sweet cherries are subject to the disease gumosis and, while not very prevalent in this valley, it is wise to take all precautions against it. It is a known fact that the Mazzard seedling is immune to this disease. Thus, in order to protect ourselves, we have found it a wise precaution to grow a Mazzard tree until it is large enough to form a frame work and then bud on it the sweet cherry varieties wanted. This work is usually done in July or August, following the spring the seedlings were planted. Usually the nurseries that sell the seedlings attend to this budding for the grower, budding the varieties wanted at the proper time.

SOIL AND MOISTURE—Cherries do well in most any good soil, but show a preference for the lighter soils. They need plenty of moisture up until some two or three weeks before the crop is picked. From then on until the fruit is harvested they need an abundance of moisture in order to produce a large, plump, juicy cherry. From then on, contrary to the belief of many, they should receive sufficient moisture to keep them growing nicely,

in order that they may set an abundance of fruit buds for next season's crop.

PRUNING—The young trees should be thinned out during the dormant season to the main scaffold limbs desired, then these should be headed slightly if the growth is more than 15 inches. This heading is done in order to get the stooling or whorl of limbs about 12 to 15 inches apart. Sometimes this can be done during the growing season by pinching off the tips when the branch has made from 12 to 15 inches of growth. However, summer pruning is a dangerous practice. The leaves are the lungs and also the digestive organs of the tree and their functioning should be interfered with very little during the growing season.

As soon as the tree gets into bearing it needs little or no pruning, except to keep out the cross limbs and give sufficient thinning to let the sunlight into the tree. Sunshine is a big factor in changing leaf buds into fruit buds.

SWEET VARIETIES—For shipping and a strictly commercial cherry, the Bing is in a class for itself. In the earlier districts the Black Tartarian being the first sweet cherry on the market brings a very good price. In the later districts the Black Republican, being the last cherry on the market, brings a fair price. But each should be considered more as a pollinizer than as a commercial product.

For canning, the Royal Anne is the



POTASH PAYS

YIELD, size, flavor, and shipping quality of fruits are dependent on the kind and amount of plant food available to the crop.

With the right kind of fertilization riper fruits can be harvested and shipped, and still reach the consumer in satisfactory condition.

The improved flavor, odor, and appearance of such fruits help sales in wholesale and retail markets.

The fertilizer for fruit should be well balanced, and contain from 7 to 10 per cent. of Potash.

SOIL & CROP SERVICE, POTASH SYNDICATE
H. A. HUSTON, Manager

42 Broadway

New York

queen of all cherries and is eagerly sought after by the canneries. The Governor Wood and Long Stem Waterhouse are canned to a limited degree, as are also the Black Tartarian and Black Republican. However, the real value of these four varieties is in pollination.

SOUR VARIETIES—The Montmorency Large and English Morello are each good canning cherries. The former is especially sought after by the canneries. The sour cherries are late bloomers and are scarcely ever injured by late spring frosts.

The May Duke is a very early semi-sweet cherry and is planted mostly for home use.

POLLINATION—The two leading varieties of sweet cherries, Bings and Royal Anne, are sterile and require pollen from some other variety in order to make them set their fruit.

For the Bing it is best to use both the Black Tartarian and Black Republican as pollenizers. The Black Tartarian begins to bloom from two or three days ahead of the Bing and is through by the time the Bing is half through. Just here the Black Republican starts in and finishes after the Bing. By this combination the Bing has pollen coming from one or other of these varieties all the time it is in bloom, thus insuring a crop.

For the Royal Anne the Governor Wood or Long Stem Waterhouse makes a splendid pollenizer. While the canneries take these two varieties at a considerable less price, the trees bear so prolifically that, as a rule, they pay very well.

ARTIFICIAL POLLINATION—The essential thing in getting a pollenizer to be effective is to get it to bloom at the same time as the one needing the pollen, and then bringing them close enough together for the insects to distribute the pollen.

E. Bowles, the famous cherry grower of Prosser, Washington, whose crop in 1919 from seven acres was nearly fifty tons of cherries, made some of his Black Republican trees bloom a few days earlier in order that they would pollinize the Bings. This was done by putting up a large sheet of canvas on the north side of the trees which reflected the heat back into the tree. This brought the blossoms out from 2 to 3 days earlier and the crop he got proves his efforts were not in vain.

One large tree in the orchard had never borne any crop worth while, as it was too far remote from a pollenizer. Mr. Bowles determined to make it bear, and tried hanging out from one to two dozen fruit jars filled with water and bunches of blossoms from the pollenizer tree in this tree. The insects then did their part by liberally carrying pollen from these blossoms to the ones on the tree. The results were phenomenal. The tree produced really a heavier crop than it should. Thus, if we only lend nature a helping hand, she will repay us many fold.

The Bings, Royal Annes and Lamberts are not only sterile, but intersterile as to each other, however, they are pollenized by most any other sweet cherry and many seedlings that bloom at the same time they do.

(Continued on page 18)

"Top Dressing Talks"



Ammonia Makes Fruit Buds

ARCADIAN SULPHATE OF AMMONIA applied about a week before blossom time (100 to 150 pounds per acre) will invigorate the fruit buds and increase the amount of fruit set. The failure of fruit to set and the early falling of fruit often is due entirely to nitrogen starvation. In some sections an early application of quickly-available nitrogen has increased the yields of fruit from four to ten times.

ARCADIAN Sulphate of Ammonia

ARCADIAN SULPHATE OF AMMONIA is guaranteed to contain 25¼% of ammonia—(at least 1-3 more nitrogen than in any other top-dressing fertilizer). ARCADIAN is the only top-dressing ammoniate that is fine and dry, all soluble, quick acting and non-leaching. It is low in price per unit of actual plant food.

Order now from your fertilizer dealer and write for our free booklets, "Fertilizing the Apple Orchard," and "Fertilization of Peaches."

New York City
Baltimore, Md.

The *Barrett* Company
AGRICULTURAL DEPARTMENT

Atlanta, Ga.
Berkeley, Calif.
Medina, Ohio

ALGEMEENE VRUCHTEN IMPORT MAATSCHAPPY

(General Fruit Import Company)

Amsterdam, Rotterdam, Cologne
head-office Amsterdam, Tel. adr. "Alvrima"

Capital Florins 3,000,000—

We solicit kindly consignments
of apples.

References:

Irving National Bank, New York
Guaranty Trust Company, New York.

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York
JNO. D. ROSS.....608 Otis Bldg., Chicago

SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.

COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.

ARIZONA—F. J. Crider, Horticulturist, Tuscon.

MONTANA—H. Thornber, Victor.

CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.

INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance; three years, \$2; five years, \$3. Canada and Foreign, including postage, \$2.00, payable in American Exchange

Advertising Rates on Application.

VOLUME XVI. NO. 8

In the New Era

The old policy of selling only developed orchard tracts to new settlers has been a grave mistake. This was the statement made recently to Hood River men by C. R. Bone, pioneer developer of orchards. The thing that should be done and must be done to encourage newcomers, he said, is to sell them a tract of undeveloped land along with each planted orchard tract.

To our way of thinking, this suggestion is a highly practical, sensible and timely one. It is in accord with the keynote of our Home-seekers' number of last month. In that was stressed the fact that the new settler will do the best and be most satisfied only through purchase of reasonably priced good land and the transformation of this, by his own resources and labor, into an intensively developed acreage.

The suggestion of Mr. Bone puts the idea in concrete form. Beneath it is sound psychology. The plan provides for creative work on the part of the settler. In this are embodied the greatest joys and satis-

factions that come to the keen, normal man. If you do not grasp this fundamental truth read again the experience articles published last month. Every one of them pointed out the joy and the pleasure derived from development work in the fruit game.

It was shown, of course, that greatest financial reward also comes from development of a tract of land into a valuable and productive ranch. But do not overlook the fact that something more than monetary reward is necessary to make the red-blooded worker happy. "That something" is constructive, creative activity. The new arrival who promptly becomes engrossed in the job of developing a fruit farm isn't the least bit likely to be writing "back home" that he is dissatisfied in his new location.

In contrast would be the man who buys a developed tract, at top price, and is immediately confronted with the new and untried job of making it pay. If things go a little wrong it is this man who, in a few months, degenerates into one of those obnoxious pests known as the knocker. At present this pest is pretty well eliminated in the Pacific Northwest—why be so foolish as to grow another crop?

The best way to give honest value to the new settler and set him on the road to becoming a contented, prosperous booster is to see that he gets some land to develop.

The County Agent

It is a fine commentary on the value of the county agent's work that the wave of deep retrenchment sweeping most every county government of the Northwest leaves him untouched. If any county agent in northwestern states has been dropped from service as a retrenchment move the incident has not come to our attention. The nearest to anything of the kind was the case of an agent who resigned when confronted with a decrease in his budget allowance.

Had the country gone through a period of readjustment four or five years ago it is a safe conjecture that

many a county agent would have been dropped from his job as a bit superfluous.

But the agricultural agent has had time to demonstrate his worth. Each succeeding year has found him widening the sphere of his influence and service. He has come to be accepted, even by the tight-fisted type of farmer, as practically indispensable.

If you will read a monthly or yearly report of a faithful county agriculturist you will admit he has abundantly justified the salary paid him. The scope and variety of his activities are astonishing.

He cannot be an expert in all lines, yet rarely is an appeal for aid or advice sent him in vain. If his own fund of knowledge and experience falls short he knows where to obtain the needed information. He makes it a point to obtain it. In the course of a year he plugs a thousand little leaks and gives a thousand constructive suggestions. He has made good. He has won well-earned approbation. He has been scrutinized by the purse-pinching county commissioners and they have stamped him "O. K."

The Other Fellow

There are numerous things that should make for optimism among Western fruit growers. The big trouble with the pessimist is that he refuses to think of the fact that he has obtained a very satisfactory crop that has brought in remunerative returns, or the fact that railroad rates have been reduced again.

There is a simple rule for the man who prefers not to be a pessimist. He need only turn his thoughts to the plight of some of the other fellows. For example, would he care to change places with the sheepman who has seen the value of his flock dwindle until he faced bankruptcy, with almost no market for his wool? Or, just how would he be feeling now were he a corn grower in the Middle West, with his year's crop worth more as fuel than as a foodstuff?

Winning Letters

First prize award of \$10 for the best and most effective experience letter submitted for use in the January Homeseekers' Number, was given to Mrs. Flora A. Morgensen of Mosier, Oregon, for her article on, "Homesteaders in the Fruit Game." Second prize of \$5 was awarded W. S. Thornber of Clarkston, Washington, for his story detailing success with raspberries. Third prize of a three-year subscription went to T. D. Hussey, Clark's Fork, Idaho.

Notice!

Because of accompanying tables it was impossible to find space for the article on use of miscible oil sprays this month. It was thus crowded out after the index had been printed and will appear next month.

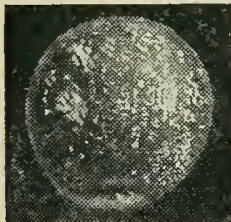


ALBATROSS BRANDS

Prevent

the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in spots or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.



Note the "blotch" or "burn" of the lead on this apple

ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

The Original and Genuine Spray Spreader

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.

Directions sent with each order



Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. 13bl.	Boxes	1 lb. Pkgs.
20c lb.	22c lb.	25c lb.

Freight prepaid to Northwest points.

NOTE: If you use Casein, specify ALBATROSS Superefine. Also call for Albatross Dry Bordeaux.

General Basic Products Co., Sole Manufacturers, 4796 E. Marginal Way, Seattle, U. S. A. Dealers: Address us for attractive sales proposition.



**Floors—
Refinish Yours Yourself
with paint or varnish—We tell how**

IT'S a simple matter, if you cannot get a painter to refinish your farm house floors yourself.

Fuller's Floor Paints are the finest finishes and last the longest. They dry over night so you can walk on them in the morning.

They are made for the amateur's use as well as the painter's—they flow evenly, spread well, and do not streak. The result is a smooth and lustrous finish.

Women can apply these floor paints as well as men.

Fuller makes a special paint for every purpose and our Rubber Cement Floor Paint is especially adaptable for farm house floors.

Two popular varnishes—"Fullerwear," the Spar Varnish for every purpose, will not mar

scratch white or turn white when hot dishes and hot water come in contact with it. Use "Fullerwear" for any varnishable surface.

"Fifteen-for-Floors" Varnish, a high gloss varnish, extremely transparent, which will give your floors that desired, well-kept appearance.

We also make a special line of paints, varnishes, enamels, etc., for all kinds of interior decorating. We specialize in these materials and methods after 72 years' experience with paints and painting practice.

We are one of the largest paint manufacturers in the United States.



Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint

Mfd. by W. P. Fuller & Co., San Francisco

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and PIONEER WHITE LEAD for 72 Years

Branches in 16 Cities in the West—Dealers Everywhere—Established 1849

Send Coupon For Interesting Book FREE

Mail coupon for "Save the Surface"—a free book that tells of the importance of good paint.

We'll send also our booklet describing Fuller's Specification Farm Paints, Varnishes, etc. Send coupon now. Find out what good paint means to you.

W. P. Fuller & Co.
Dept. F. 21, San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your booklet of farm paints and varnishes.

Name.....

Street.....

City.....State.....

Cherry Growing in Yakima Valley

(Continued from page 15)

THE spring weather during the blooming season has a great deal to do with the setting of the crop. Warm sunny days during the blooming season will facilitate the work. The pollen will be carried further and be much better distributed than if the weather is cold and rainy. The health and vigor of the tree is quite a factor, as the more food it has stored up, the easier it will be for it to set a crop.

Another factor worth considering is that while the birds are of much economic value to the fruit grower they do eat a few cherries. However, it is a known fact that the birds much prefer the smaller, softer cherries and seedlings to the large solid ones. So, if there should be no market for the pollenizer, they make a delicious bird food and not only serve the purpose of assisting the large sweet cherries to bear, but also lure the birds away from them.

DISTANCE FOR POLLENIZERS—In planting Bings I would set three rows of Bings then a row of Black Tartarians and Black Republicans in the same row, alternating them. Then six rows of Bings and then another row of the pollenizers and so on across the field. Bear in mind that the pollen is usually carried from three to four trees in all directions. Do not figure on the wind carrying the pollen as it only carries about 1 per cent, the insects carrying the other 99 per cent.

In planting Royal Anne use the same method. However, it is not necessary to alternate the pollenizers in the row. Use either the Governor Wood or Long Stem Waterhouse.

POLLENIZING OLD TREES—This can be done in two ways. (a) Plant young pollenizers as near to the old trees as possible, but not so close that the old trees will smother them. Give them plenty of care and make them grow as rapidly as you can. Prune very lightly by thinning out where they are thick, and thus they will bloom very early. Severe pruning retards the blooming and fruiting of trees. (b). Go up in the top of the old trees during the dormant season and head back sufficiently to make the trees throw up young vigorous growth the following growing season. Then bud into this new wood in August the pollenizers wanted. This will put your pollenizers in the top of your trees where the fruit is too high to pick, but they will function to make the tree bear and also protect your real cherries from the birds.

FROST PROTECTION—The rancher who is planning to set out a cherry orchard should study his location as to air drainage and be sure that his orchard is free from late spring frosts. Sweet cherries bloom very early and should either be above the frost line or protected by artificial means.

Ranchers who already have their trees

grown where they are subject to frosts should protect them. It can be done, for I have tried it and succeeded. Mr. Bowles, referred to in this article, used both oil and wood the year he got about 50 tons of cherries, smudging some four or five times.

The frost was so severe that trees outside of the line of fire had practically no cherries on them. However, the details of smudging, or heating the orchard, constitute an article of themselves and I may offer that at some future time.

**WRITE
RIGHT
NOW!**

For our Book "DEHYDRATION of FOOD PRODUCTS"
—It's Free. There is a best way to dry APPLES, PRUNES, etc.

We Build Best
Plants for
Dehydration of
Fruits and
Vegetables at
Low Cost

Stephenson-Schaller Co.
ENGINEERS - MANUFACTURERS
SAN FRANCISCO

Address 312 Liberty Bank Building, San Francisco



KAYSO our combined
casein spreader & adhesive
in your spray means —

Perfect Spread — A thin film of spray solution, spread evenly over every part of tree, foliage and fruit, giving complete protection against insect pests and fungus diseases.

Low Cost — Costs less than other spreaders and spreads the spray over more trees.

Adhesion — Your spray will stick, rain or shine.

Convenience — KAYSO requires no cooking. Add it directly to the spray tank in dry form.

Safety — No spray injury can result from the use of KAYSO.

Efficiency 100% — KAYSO is manufactured from the highest grade Casein, finely pulverized and completely soluble.

Use KAYSO with ARSENATE OF LEAD, BORDEAUX MIXTURE, LIME-SULPHUR and all other spray solutions.

KAYSO is for sale by all leading Pacific Coast dealers. Your local dealer should be able to supply you. If not write us direct.

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY ST.
SAN FRANCISCO

277 BROADWAY
NEW YORK

740 TERMINAL ST.
LOS ANGELES

Treatment of Injured Trees

(Continued from page 10)

of the tree trunk, then lifting up the bark from the wood at that point. Then the scion can be easily inserted for the length of the wedge.

THE scion stick is then measured to fit the distance of the wound to be covered, and sharpened at the upper end into a wedge. This wedge is then inserted under the bark in a similar manner to the insertion at the lower end. It is an excellent plan to have the scion a little longer than is necessary, so it will fit firmly in its place. Finishing brads or small staples should be used to tack the wedge portion of the scion to the wood of the tree.

Enough scions should be placed in this way to cover the wound, taking care not to insert them closer than two or three inches from each other for fear of loosening the bark around the tree.

When the grafts have been all set, waxing is the next operation. Liquid grafting wax is usually used, and this can be made according to the following formula: resin, 5 pounds, beeswax 1 pound, linseed oil 1 gill, finely powdered charcoal 1/4 pound. The ingredients of this mixture should be melted up together and stirred until well mixed. Then it should be poured into vessels well greased. The wax may be laid aside when cold and melted up for use in the field when needed.

PRUNING—When much of the bark has been destroyed by the freeze it will be necessary, as a rule, to prune the top of the tree rather severely by cutting back and thinning out branches. This will enable the young grafts to carry up sufficient moisture for the top of the tree.

WOUND COVERINGS—In times past it has been a common practice to cover any wounded surface on the tree with some impervious material, such as lead paint, asphaltum, grafting wax, etc. It has been found by repeated experience that these coverings are open to one very serious objection. They all hold moisture underneath the covering, next to the wood. At the same time they are not sufficiently tight to prevent heart rot organisms from gaining entrance under the covering. Organisms of this sort thrive best in a moist environment, and therefore do better under these wound coverings than they would if the wounds were left exposed to the weather and allowed to keep comparatively dry.

In recent years many experiments have been tried with other materials with the idea of finding something that would be porous enough to allow moisture, to evaporate through the covering. The most satisfactory material of this sort is a Bordeaux paste, made by combination of

copper sulfate with lime. This can be made up at home, as follows:

*“Bluestone Solution—Dissolve 1 1/2 pounds of bluestone (copper sulfate or blue

vitriol) in one gallon of water in a wooden, earthenware or glass vessel. This is best done by suspending the chemical in a bag of loosely woven cloth, or burlap, at the



Will they be dead when you get back?

THEY WILL if you spray with Hall's Nicotine Sulphate. Plant-lice, thrips and similar soft-bodied sucking insects can be wiped out by a systematic spraying with this powerful insecticide.

Authorities agree that Nicotine is the most effective contact poison known.

Hall's Nicotine Sulphate is guaranteed to contain 40% pure nicotine.

Being a vegetable extract it will not injure fruit or foliage.

And—made up as a spray its cost is only two cents a gallon.

Ten-pound tins—\$15.00. Two-pound tins—\$3.75. Half-pound tins—\$1.25.

Buy from your dealer. If he cannot supply you, order direct from us.

Hall's Tobacco Dust

Very effective where dusting is preferable to spraying.

Finely ground and guaranteed to contain a full 1% nicotine.

100-pound sack, \$4.50
2-pound drums.. .25



HALL TOBACCO CHEMICAL CO.
3949 Park Ave., St. Louis, Mo.



Gardeners, Orchardists, Poultrymen

A WESTERN CATALOG FOR WESTERN BUYERS, a reliable, truthful guide, well worth reading. Twenty years' practical experience here enables us to give you the "Best for the West," "Highest Quality" stocks, efficient service. Write Today. It contains 160 pages of valuable and up-to-date matter of vital interests to the Western Planters of Seeds, Plants, Roses, Fruit and Ornamental Trees, Shrubs, etc., and buyers of Fertilizers, Sprays and Spray Pumps, Garden and Farm Tools, Incubators, Brooders, Poultry Supplies and Feeds, Birds, Pet Stock, etc.



Routledge
SEED & FLORAL CO
145 147 2nd St. PORTLAND ORE.

top of the water, or by pounding the lumps into small bits and dissolving by the use of hot water. This solution attacks metals (except copper) very actively.

"Lime Paste—Slake three pounds of quicklime with one gallon of water, in the ordinary manner.

"Mix in Equal Parts—When the lime is cool enough, equal parts of the bluestone solution and the lime paste should be mixed together thoroughly. Mix only enough at one time for a day's use. Apply like whitewash with a brush. The stock bluestone solution and stock supply of slacked lime can be kept indefinitely if not mixed together, provided water is added from time to time, to keep the solution up to the original volume.

"If Bordeaux paste is used alone its application should be repeated every fall."

POWDERED Bordeaux, which is now made by several manufacturing companies, can be used more conveniently. In this form all that is necessary before making application is to add sufficient water to the powder used to form a reasonably thick paste. This is then applied with a brush to the exposed surface.

Before making application of the Bordeaux paste, it will be necessary to remove all dead bark around the edges of the wound, cutting back to live, healthy tissue. All badly damaged branches should be sawed off where they join the trunk and their stumps covered with the paste. The great objection to the use of Bordeaux paste lies in the fact that it flakes off, during the rainy winter especially, and must be renewed every year. To prevent flaking and to make a paste which is more permanent in its nature, different ingredients are being tried with the Bordeaux to improve its sticking qualities. Calcium caseinate, at the rate of one-half teaspoonful to the gallon of Bordeaux paste, is one of these materials used to increase adhesiveness. This treatment is still in the experimental stage and must be watched carefully by anyone applying it.

Another combination that gives promise is a paint made by using raw linseed oil and powdered Bordeaux. The Bordeaux is slowly sifted into the oil and stirred so as to keep the powder from lumping. When the consistency of heavy paint is reached it is ready for use. This must be applied when the wood is perfectly dry if the treatment is to be successful. Only one coat should be applied in any one season.

It will be best for the grower to put on some of the linseed oil Bordeaux to a few trees, in comparison with a Bordeaux paste which he might use on the balance of his orchard. In a year or two, it will probably be possible to tell which is the better mixture to use. The main thing to look

after in applying the linseed-Bordeaux paint is to see whether heart rot develops under the paint.

By keeping these wounds covered in the manner described it ought to be possible to preserve many trees and save many an

orchard that would go to wreck in a short time if it were neglected.

YAKIMA fruit growers are buying more trees for planting than in some years past and many of them are for new plantings.

CUSHMAN

Greater Capacity and Pressure With a Lighter Engine

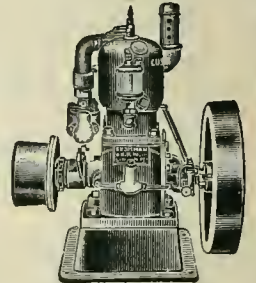
To meet the demand for lighter weight, greater capacity and the higher pressure that is absolutely necessary to produce the desirable "fog spray," several of the leading manufacturers of sprayers have standardized on light weight high grade Cushman Engines for their power.

A Cushman Engine for Every Size of Sprayer

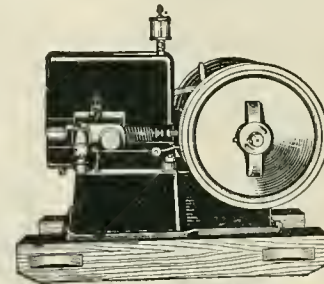
The 1½ H. P. Cushman handles the smaller sprayers of 3 to 4½ gallons at 200 to 300 lb. pressure.

The 4 H. P. Cushman (weight 190 lbs.) is the proper size for the larger triplex orchard sprayers with a capacity of 8 to 10 gallons at 250 to 300 lb. pressure or more.

The 8 H. P. Double Cylinder Cushman, weighing only 320 lbs., is the ideal engine for the largest orchard and standard shade tree sprayers.



LIGHT WEIGHT 4 H.P.
Weighs only 190 lbs.



1½ H. P. CUSHMAN
Simplest, most Compact and with
less number of parts.

Rebuild Your Sprayer
with the famous Cushman
Engine and get more power
and pressure with less weight.

Longer Life and More Reliable

Cushman Engines are light in weight, compactly built and deliver much more power per pound. They are steady in operation and require less attention. They are regularly equipped with auto type Carburetor, sensitive flyball type Governor, Friction Clutch Pulley for both chain or belt drive, jump spark Ignition, and are forced water-cooled, insuring full power for continuous service under all working conditions.

They have been successfully used for the difficult "attachable power drive" jobs for 15 years and are well and favorably known by manufacturers, dealers and repair station mechanics.

Write us the sprayer you use or expect to buy and we shall tell you what equipment and power is best adapted for your sprayer.

CUSHMAN MOTOR WORKS

978 N. 21st Street, Lincoln, Nebraska.
419 East Ash Street PORTLAND, OREGON

GRASSELLI

Now is the
time to
order your
Arsenate
of Lead

Our 83 Years of Experience and Reputation Is Your Protection

PROOF is something real—something you can bank on. 83 years of it is a solid, substantial guarantee of quality and results! Therefore, play safe—do away with uncertainty—rely upon the 83 years' experience and reputation of GRASSELLI. This name on Spray Products means highest quality and unvarying uniformity, and costs you no more than some unknown name.

Calcium Arsenate, Lime Sulphur Solution, Bordeaux Mixture.

The Grasselli Chemical Co.

Established 1839
CLEVELAND

*See Page 136, Third Crop Pest and Horticultural Report, 1915-20, Oregon Agricultural College Experiment Station.

Control of Anthracnose

(Continued from page 7)

locally. The crop averaged one-half a box per tree.

It was found that when packing was commenced practically no sign of the Bordeaux mixture could be found, except very occasionally in the calyx or stem end of the apple, and it was unnecessary to wipe the fruit. However, the surface of the apples was left in a very sticky condition and it was almost impossible to wipe the fruit unless it was first washed. No complaint was received with reference to the apples after they were sold.

COUNTS OF INFECTION, 1917—On May 25, J. W. Eastham, plant pathologist, made the counts for infection on the plots with the following results:

Plot 1—early spray, 270 one and two-year-old branches examined from 5 trees, and 31 were found to be infected, or 11.4 per cent.

Plot 2—early and late spray, 375 one and two-year-old branches examined from 5 trees, and 27 were infected, or 7.2 per cent.

Plot 3—late spray only, 326 one and two-year-old branches examined from 5 trees, and 251 were infected, or 76.99 per cent.

Plot 4—check-plot, showed practically 100 per cent infection.

It will be seen by this that even the spraying the first year showed marked results. The late spray did some good, but

nothing in comparison with the early or the early and late spray.

(To be Continued)

Emulso

THE PERFECT OIL SPREADER

Especially perfected for spreading LIME SULPHUR Sprays.

"EMULSO" carries the lime sulphur into every crack and crevice, completely destroying all scale and leaving none to carry over to blotch the fruit.

"EMULSO" will enable you to cover approximately one-third more trees with the same amount of spray. How much spray will this save you? How much labor expense?

"EMULSO" protects the face and hands from the burning effect of lime sulphur, an item that interests every man behind the spray gun.

Field results will show the advantages of "EMULSO" with LIME SULPHUR sprays over any other type of spreader.

We have made "EMULSO" worth your while. Write us today.

MILLER PRODUCTS COMPANY
PORTLAND, OREGON

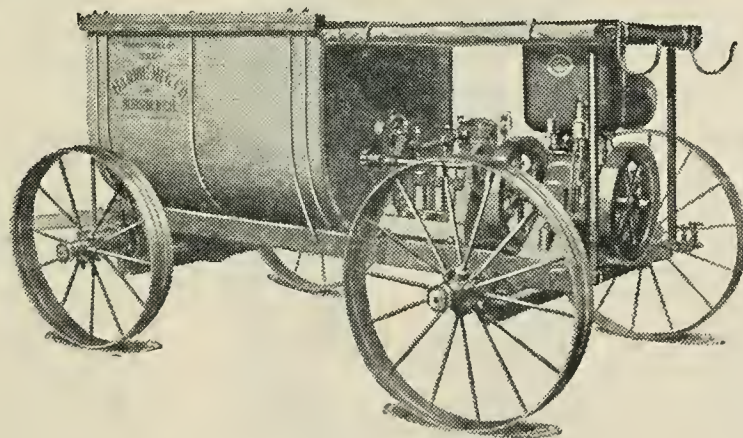
Emulso
THE PERFECT OIL SPREADER

For
Lime Sulphur Sprays

Spreader
THE PERFECT SPREADER

For
Arsenate of Lead Sprays

EQUIP YOUR ORCHARD WITH



A HARDIE TRIPLEX

The Hardie Triplex is made in three sizes each giving you high pressure, effective spraying, but differing in the amount of liquid pumped per minute.

Be your acreage large or small you can, in the Hardie, obtain in a suitable size the high standard, design and construction which means spraying success.

Here are three machines of proven worth, practical, reliable and efficient.

The Hardie Light Triplex, capacity.....6 Gallons per minute
The Hardie Big Triplex, capacity.....9-10 Gallons per minute
The Hardie Mogul Triplex, capacity.....14-15 Gallons per minute

Built right and priced right, they will do their share in making your orchard profitable.

Our Free Catalog will interest every earnest Fruit Grower

THE HARDIE MANUFACTURING CO.

55 NORTH FRONT STREET, PORTLAND, OREGON

Some Reliable Northwest Nurserymen

PLANTING

Salem Nursery Co.
FRUIT, NUT AND
ORNAMENTAL
TREES

WILL BRING YOU
SATISFACTION
NOW IS THE TIME
TO ORDER.

Write

Salem Nursery Co.

428 Oregon Bldg. SALEM, OREGON
Additional Salesmen Wanted

Canyon Home Nursery

Everbearing Strawberry
Plants Our Specialty

If you want true to name, strong,
healthy, everbearing, strawberry
plants, write us for prices.

F. I. MOFFET

Ellensburg, Wash.

Yakima and Columbia River Nursery Co.

Growers of Choice

FRUIT TREES
SMALL FRUITS and
ORNAMENTALS

Yakima, Washington

*"Yakima Grown" is the best
guarantee.*

FOR SALE!

Apple, Peach, Pear, Plum,
Prune and Cherry trees, one
year old. The best of stock.
Scions are taken from se-
lected trees.

Order Now

F. A. MASSEE

HOOD RIVER, OREGON

Reliable Trees and Plants

We have a complete line of guaranteed
nursery stock: apple, pear, cherry, peach,
apricot, prune and nut trees, gooseberries,
currants, etc., which we offer planters at
very close prices. However, orders should
be placed at once to get the best grades.
Send us your want-list today.

Benedict Nursery Co.

185 East 87th St. N. Portland, Oregon



FILBERT TREES

I have a choice lot of filbert
trees of approved varieties.
The bulk of the nursery
stock this year consists of
Barcelona and White Ave-
line.

DR. J. H. WILKENS

Box 126 McMinnville, Oregon

FRUIT TREES NUT TREES PLANTS, ETC.

We offer a good line of Italian,
French Improved, Double X and
other prune trees, propagated from
selected scions. Walnut grafted,
Filberts, Apple, Pear, etc. Berries,
Gooseberries, Currants, Plants, etc.
We have something of interest for
you; try our inexpensive selling sys-
tem; send for Planters' List; 31 years
in business.

Carlton Nursery Co.

GROW GRAPES

under contract. Ask for grape cir-
cular. Special prices on grapes, ber-
ries and asparagus for commercial
planting. Sweet cherries, peaches,
apricots at lowest market prices. All
kinds of fruit and ornamental stock.
We offer strictly first class stock and
guarantee satisfaction.

Home Nursery Co.

RICHLAND

WASHINGTON

Well Recommended

Seattle, Wash.
December 15, 1922

BETTER FRUIT PUBLISHING Co.
Portland, Oregon

DEAR SIR: In reply to my inquiry,
the horticultural department of one
of our state schools recommended
your publication as one of the best
for fruit growers of the Pacific
Northwest, so I wish to send a sub-
scription to my son-in-law, who is
manager of a fruit orchard.

Mrs. A. D. BIXBY

The Red Rome, A Promising Apple

By HENRY HARTMAN

Assistant Professor of Pomology, Oregon Agricultural College

IT HAS been evident for some time that Oregon and Western Oregon in particular, is in need of at least one new variety of apple, the fruit of which is red in color, of good size, and which keeps fairly late. The variety, in addition, must be a good producer and should be reasonably free from scab.

With this need in mind the Experiment Station at Corvallis, a few years ago, established an apple variety block of some 225 sorts, thinking that out of this number, surely a few would be adapted to Oregon conditions. Strange as it may seem, however, but few of these varieties seem promising at this time. Almost without exception the varieties have proved to be unsuitable for one reason or another. Out of the entire collection, in fact not more than two appear to be of such caliber as to deserve a place in the list of standard sorts. Of these, the Red Rome is undoubtedly the most promising.

The merits and weaknesses of the Red Rome can perhaps be best ascertained by considering, first, a few facts relative to its origin, and relative to its parent, the common Rome. The common Rome was first noted by H. N. Gillette of Lawrence County, Ohio, and was brought to the attention of the Ohio Convention of Fruit Growers in 1848. Like many other varieties the Rome originated as a chance seedling and its true parentage, therefore, is unknown.

The variety seems to have been popular from the beginning and even now it is a leading commercial sort in many apple sections. It is a favorite with many growers because of its early and regular bearing,

uniformity of size and comparative freedom from blemishes. It is respected by the trade because of its size, ease of handling, and slight susceptibility to scald and other storage troubles.

Shortly after the introduction of the Rome into cultivation, it became evident to horticulturists and especially to plant breeders that the color composition of this apple was more or less unstable. Occasionally, within the variety, there appeared individual fruits which displayed peculiar

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.

Salesmen everywhere. More wanted.

TASTES LIKE A DATE

Fruit Grows Uniformly Large. Sugar Content 50 Per Cent When Dried. A Delicious Confection; Prolific Profitable. ORCHARDS BEING DEVELOPED ON A SPECIAL PLAN. Write for Details and Literature.

ORDER Your Trees Now

Delivered by Freight, Express, Mail.



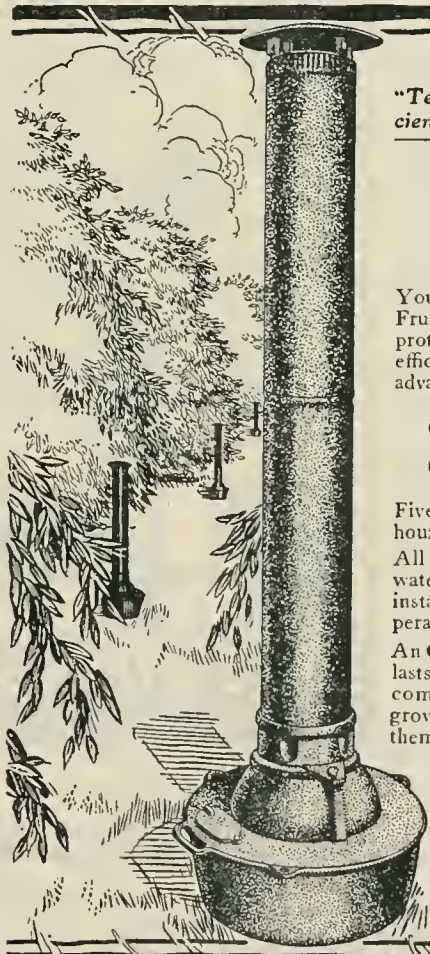
Address all letters to Dept.

Send 15 cents for Sample Box

Propagating Rights Controlled.

OREGON NURSERY COMPANY

ORENCO. OREGON



"Tests on Oldsmar Heater show 100% Efficiency."—Prof. Peeples of Armour Institute

Frost Insurance at Minimum Cost

You insure your house, why not your crop? Fruit growers everywhere can have assured crop protection through the use of this improved and efficient heater which has a number of notable advantages over any other kind.

Oldsmar Frost Protector Costs Less To Operate

Five gallons of distillate fuel oil burns 10 to 15 hours according to temperature desired.

All cast iron (stack excepted), the Oldsmar is waterproof and cannot get out of order. Lighted instantly, it requires little attention and temperature regulation is positive.

An Oldsmar costs less than other cast iron heaters, lasts longer, requires fewer to the acre; affords complete protection — California and Florida grove owners and truck farmers are ordering them by thousands.

Write today for literature and full information about how the Oldsmar can protect your crop

Oldsmar Tractor Company
Oldsmar, Florida
Kell-Oil Heater Company
Coldwater, Michigan



Golden Winesap

A Wonderful Apple

It has the juicy tartness of the Jonathan, the meatiness of the old Winesap, the beauty of the Winter Banana, the deep gold color of the Grimes and the keeping qualities of the good old Ben Davis. Strong grower, healthy and vigorous. Originated in Utah and should be hardy everywhere. Bears young and very profusely.

True Delicious Apple

This is the ideal farm apple. Large fruit, beautiful dark red, quality unsurpassed. Flavor sweet, slightly touched with acid, comes out of storage in perfect condition.

Campbell's Early Grape

A new variety, vigorous growth, very hardy, very early and an abundant bearer. Good shipper; keeps for weeks after ripening.

Perfection Currant

In our entire experience this is the best bearer, the largest, sweetest and easiest to pick. Rich, mild flavor, less acid and few seeds.

Low Prices Direct to You

All kinds of Fruit Trees, Plants and Shrubs, Vegetable, Flower and Field Seeds, etc., of the best quality, at very low prices. Get our Big Free Illustrated Catalog and prices before you buy.

SONDEREGGER NURSERIES & SEED HOUSE
80 Court Street Beatrice, Nebraska

Seeds and Trees That Grow

O. V. BADLEY COMPANY

Distributors of Oldsmar Products

425 East Morrison Street

Portland, Oregon

color markings. A certain tree or part of a tree, for example, produced apples that were distinctly marked by longitudinal formulse, cooking, any operation requiring evidence of two facts: (1) that the Rome carried at least two distinct factors for color, and (2) that segregation of these factors was being accomplished by bud variation. In the light of these facts, it was possible to predict that some day a red Rome would appear, i.e., a Rome wherein, solid red would be the dominant color. The prediction has come true, not once, but several times, for red Romes have appeared as bud sports in more than one instance.

So far as anyone can determine, the Red Rome is essentially a Rome embellished with a bright red covering. In other characteristics such as form, size, texture, quality and tree habits, it appears to be nothing more than a common Rome. This being true, a long test of the variety hardly seems necessary.

DURING the past few years, the Red Rome has been under observation in the experimental orchard at Corvallis and the members of the Department of Horticulture of Oregon Agricultural College feel that the variety is at least promising for Oregon and other northwest localities. Thus far, the variety has proved to be the equal of its parent so far as productivity is concerned. It withstood the freeze of December 1919, apparently without damage. It has shown no trace of spray injury either by Bordeaux mixture or lime and sulfur, and but little difficulty has been encountered in keeping it free from scab.

It must not be inferred, however, that the Red Rome is a perfect apple, free from all objectionable features. To quote an old proverb, "every rose has its thorns." There has been noted, in some individual cases, a tendency for the Red Rome to revert or change back to its parental type. Within the variety, occasionally a tree or part of a tree produces fruits which are striped or variegated, i.e., instead of displaying the solid red character, they display partial reversion to the color of the common Rome.

During the next few years some difficulty will be encountered in securing scion wood of the Red Rome that is absolutely free from reversion. The scion wood, in all cases, should be taken only from trees or parts of trees that are known to produce apples of a solid red color. Such scion wood should be selected or marked while the fruit is on the trees.

A considerable number of Red Rome trees are now fruiting in Yakima and other Washington districts. The Department of Horticulture at the Oregon Agricultural College will endeavor, during the coming year, to locate a number of trees that are true to type and from which scion wood may be obtained.

MYERS SPRAY PUMPS HAVE PRODUCED BIG ORCHARD PROFITS



From the half-hearted spraying efforts of earlier days to the specialized, efficient methods of today, through all the ups and downs of spraying to its present position, MYERS SPRAY PUMPS and ACCESSORIES have been Leaders, always playing an important part in the improvement and advancement of spraying by hand or power

A few styles at first—small capacity bucket and barrel pumps—but they filled the needs of their time satisfactorily and paved the way for the now extensive line of fully proven and highly successful MYERS Hand and Power SPRAY PUMPS for Spraying, Coldwater Painting, Whitewashing and Disinfecting

As a commercial fruit or vegetable grower, a farmer, nurseryman, or just plain home owner, with trees, vines, shrubbery and plants to spray MYERS SPRAY PUMPS—the "Honor-Bilt" Line, with the long record of success behind it and its present standard of construction with numerous patented features and improvements guaranteeing high efficiency—should be your first choice. And the MYERS Line is so extensive, that whether your spraying operations are large or small, there is a MYERS SPRAY PUMP that will fit your needs.

A copy of our 64 page Spray Pump Catalog, shows all styles with 20 pages of reliable spraying information, mailed free, without the least obligation, to anyone interested in spraying. A postal brings it to your door.



FIG. 1690



FIG. 1518



FIG. 1736



FIG. 1541



FIG. 1862



FIG. 1795



FIG. 1984



FIG. 1520



FIG. 1824



THE F.E. MYERS & BRO. CO. 135 ORANGE ST. ASHLAND, OHIO.
 MANUFACTURERS OF PUMPS FOR EVERY PURPOSE—
 HAY UNLOADING TOOLS AND DOOR HANGERS

Pacific Northwest Distributors



Spokane, Wash.
Portland, Oregon

RUY FROM THE LOCAL MITCHELL DEALER

<p>Musical Merchandise</p> <p>—</p> <p>Write Us</p>	<p>WE SAVE YOU MONEY!</p> <p>W. Martius Music House, Inc.</p> <p>1009 First Avenue, Seattle, Washington</p> <p>Everything Known in Music</p>	<p>SHEET MUSIC</p> <p>—</p> <p>Write Us</p>
---	---	---

Advertising Apples

IT IS being felt more and more by those handling the Northwest's boxed apples, that an advertising campaign may be made of great value. This belief crystallized in the appointment of a committee on advertising, at the inter-state conference of horticulturists at Spokane a few weeks ago. This committee is headed by Professor C. I. Lewis of Salem. The other members are: Paul Weyrauch, Walla Walla; C. H. Swigert, Yakima; Dr. H. L. Geary, White Salmon; A. W. Stone, Hood River; David L. Oliver, Wenatchee; J. P. Gray, Nampa.

There is a feeling, Professor Lewis says, that a somewhat mistaken position has been taken with regard to advertising apples. Advertisements have stressed, first, the brand; second, the northwest apple; third, apples. The correct and more effective method would be to center most on advertising apples in a way to increase consumption. Secondly, the American public should be taught that the northwest boxed apple is the finest offered to the trade. In this scheme of things the organizations and private handlers would hold third place with their advertising of particular brands.

In this plan there would be effort to show the American people that apples are a food, not a luxury, and an economical food at that. There would be education also on the varieties the Northwest produces and the seasons for these varieties. Wider consumption of apples through education on new uses of them would be sought.

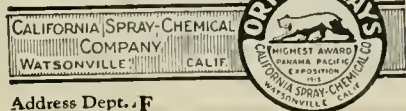
The phenomenal success of the Associated Raisin Growers of California in introducing the little red five-cent package of Sun Maid raisins is cited as an example of what may be accomplished. Introduced to the trade only on July 17, 1921, it was reported October 10, that sales of these had amounted to 331,000,000 packages. These equal 2,300,000 cases, or over 17,000 tons and had a value of \$16,500,000.

The advertising committee will hold a meeting during this month to take up the problems left to its hands, and its work may have far-reaching and very beneficial results.

Big Apple Crops

For bigger crops and better fruit spray your trees with ORTHO OIL EMULSION and Nitrate of Soda. ORTHO combines with nitrate without breaking down. Put your spraying problems up to us.

Write for Ortho Circular



Address Dept. F

MANY of our readers may be located where it is possible profitably to raise at least a few turkeys, ducks or geese. Give the matter a little thought and investigation. If you decide to attempt the venture with one or more of these fowls go at it with full determination to do it right. It is better not to start with them if you are to be content with haphazard methods.

ACCORDING to Frederick Benz, agricultural agent of the Northern Pacific railroad, formerly known as the "potato king" of the Northwest, his sons will realize about \$30,000 on potatoes produced on their ranch at Toppenish, Wash. The sons farm 320 acres, of which 80 acres is cropped to potatoes. The price received has been around \$27.50 per ton.

Figure Your Profit In Apples

Between big, perfect, sound apples—and knotted, dwarfed, unmarketable fruit the kind caused by aphid injury.

By the use of 8 cents to 12 cents worth of Black Leaf 40 Nicotine Sulphate per tree, you can control Aphid, Thrips, Leaf Hopper and other soft-bodied sucking insects.

Just picture the difference in your own orchard between a yield of sound fruit and a crop of knotted and dwarfed "aphid apples."

Why, a mere handful of these culls will cost you more than the quantity of Black Leaf 40 required per tree.

BLACK LEAF 40

Nicotine Sulphate

Black Leaf 40 has for many years been the "true and tried" protector of the crops of the progressive growers of the United States and Canada against these insect pests that are so destructive to your orchard profits.

Send for copies of complete spray chart leaflet and bulletins, with name of nearest Black Leaf 40 dealer.

Tobacco By-Products & Chemical Corporation
Incorporated
LOUISVILLE, KENTUCKY

For your Dormant Spray

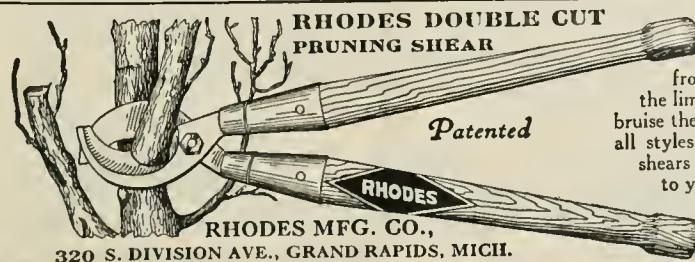
DORMOIL

Especially for Leaf Roller, Scale, Aphid, Blister Mite, Red Spider, etc.

DORMOIL has been used with remarkable success in Oregon, Washington and Montana. Write for details

HOOD RIVER SPRAY CO.

Hood River, Oregon



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.

What of Spreaders?

(Continued from page 6)

Smith, of Idaho, considers the addition of the spreader decidedly improves the efficiency of dormant lime sulfur in scale control; and lime sulfur in the delayed dormant for red spider control.

DeOng, of California, considers spreader addition advantageous in red spider and aphid control sprays.

Wenatchee authorities find improvement in most of their spray applications from the addition of casein spreaders. It was observed that in the lime sulfur, arsenate combination sprays, casein spreader reduced and retarded the development of sludge.

Where improved wetting, covering and adherence of sprays is desired the addition of casein spreader improves.

Sixth—What are the adverse reports on casein spreaders?

With a new substance introduced extensively for the first time and tested under a great variety of circumstances some adverse reports and serious criticisms are to be expected. Vague rumors and occasional reports coming in during the season led me to expect rather definite and general unfavorable reports upon some points. May I say that, everything considered, I am most agreeably surprised at the general and united favorable attitude on spreaders.

The human element must needs enter into any tests of this nature to a certain extent. Certain individuals have a bump of perverseness which prevents them following explicitly the instructions printed on the container.

Finally, the one rather universal serious criticism or complaint of the commercial casein spreaders is their cost. The cost is too high is the tenor of the report. In this article, I attempt neither to condone nor defend; I do hope it will be possible, as the business develops, for the commercial companies to decrease the cost of their product.

D. F. FISHER, federal pathologist of Wenatchee, has developed two modified casein formulæ and they were used rather extensively in the Wenatchee fruit section by growers last season. Two different methods have been used. One is this: Water, 1 gallon; caustic soda, 3 ounces; casein, 1 pound.

The caustic soda is dissolved in the water while bringing to a boil, then the casein is slowly sifted in with careful stirring to avoid lumping. A little boiling will dissolve the casein and this solution then forms the stock solution and may be used as a spreader at the rate of one pint to the 100 gallons, or the above amount is sufficient for 800 gallons of spray.

The second method is similar except that one employs baking soda instead of caustic soda, and the material does not need to be cooked. Probably a rather finely ground casein would be advantageous, and two

gallons of water would avoid working with so thick a paste as otherwise. This stock must be used within reasonable time after its preparation because of the deterioration with a development of most unpleasant odors.

Summarizing our information on the casein spreaders, then, we may say that:

First—While there is considerable room for question as to the value of spreaders in increasing the toxic efficiency of the poison spray application where high powered outfits are employed in the hands of experienced operators and applications carefully timed; for the vast majority of growers the addition of spreaders is of advantage.

Second—By increasing the evenness of the spray deposit it is possible to obtain a more even coloring of the fruit, a point of more than passing importance. If it will avoid the necessity for wiping, as was the case with many growers last season, this likewise will prove a decided factor in favor of their more general adoption.

Third—The addition of spreaders to other applications than the poison sprays seems equally desirable and effective in increasing their values under the same conditions.

Fourth—The cost of the commercial casein spreaders tends to operate against their more universal acceptance by growers. This point is one the commercial concerns must appreciate and any possible reduction in price commensurate with good

business should receive the most serious consideration.

It is our opinion that spreaders have come to stay. Undoubtedly improvements and modifications will take place as our knowledge and experience of spreaders increase.



Have Fenner build your home

Know in advance exactly how your home is going to look—what quality of materials will be used—when it will be completed—what it will cost.

For eleven years Fenner has designed and built Fenner Factory Cut Homes in all parts of the country. Cutting at the factory eliminates waste in materials and lessens labor costs. When you build a Fenner home you get better materials, better construction and save money. More than 100 designs to choose from.

Send 25c for the beautiful Fenner Plan Book showing colored illustrations and floor plans.

Postoffice Box K-4318

FENNER MFG. CO.
Foot of McKenna Avenue, Portland, Oregon



NITRATE of SODA

AT LEAST 10,000 BOXES DUE TO NITRATE OF SODA

In a letter written January 11th last, Mr. Arthur L. Helliwell, general manager of the well-known Wenatchee-Beebe Orchard Company, states that their orchard experts are unanimous in giving credit to nitrate of soda for "at least 10,000 boxes" of a 15,000 excess apple crop last fall.

Mr. Helliwell's company used 20 tons of our Nitrate of Soda in the Fall of 1920 and another 20 tons in the Spring of 1921. This aggregate of 40 tons was scattered over those portions of their 400-acre orchard, which seemed most in need. From 150 to 300 pounds per acre was used.

"I have taken the time," says Mr. Helliwell, "to make a very careful study of the needs of Wenatchee orchard soils, and I am well convinced that it is nitrogen and humus rather than potash or phosphorus that our soils need."

Write Us TODAY For Prices and Particulars. Rejuvenate Your Orchard
With Nitrate of Soda

THE NITRATE AGENCIES CO.

HOGE BUILDING, SEATTLE

Spray Program for 1922

(Continued from page 9)

applied to the trees before the coming of the fall rainy period. The best time for this would be with one of the summer codling moth sprays.

SPRAY PROGRAM FOR CHERRIES—An elaborate spray program for cherries is usually unnecessary. Of the insect pests for which sprays are generally applied we have the San Jose scale and aphids. For the control of these a combination spray of lime-sulfur 12-100, plus Black Leaf 40, 1 pound to 100 gallons, should be applied just as the buds are swelling and before they open.

Because ants carry aphids up the trunks to reinfest the trees, it is advisable after spraying to band the trunks of the cherry trees with a strip of tree tanglefoot, two and a half inches wide.

Where blossom blight caused by the brown rot fungus is troublesome a spray of Bordeaux 4-4-50 should be thoroughly applied just as the first blossoms are starting to open, but in many orchards this trouble

is not serious enough to require attention. Where cherry leaf spot is bad several sprayings with Bordeaux 4-4-50 will ef-

fectively reduce the injury if applied beginning about the last of April or the first of May and repeated at three-week intervals.

Land clearing an easy, one-man job—big stumps pulled clean with this wonderful machine.

K HAND POWER Stump Puller

The Fitzpatrick Products Corp. 99 Jobo St., New York 952 Mission St. Box 38 San Francisco, Cal.

Works on any land. Operated by hand! No horses; no digging. Made of the finest steel—guaranteed. Adopted and used by U.S. Government officials and many states. Send for FREE illustrated book on Land Clearing and special offer

ACTUAL PHOTOGRAPH

SERVICE

IS OUR FIRST N-AIM

PERFECT
FRUIT
LABELS

THE
SIMPSON & DOELLER
CO.

1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES
AND PRICES

WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.

Fruit Auction Building

Auctioning Fruit for 26 Years

Over 26 years ago we began to sell fruit at auction to a handful of buyers in a little room. While our start was small, our ideas and our ideals were big.

In the early days our slogan was—"Work for the seller as hard and as conscientiously as we ourselves would like to be worked for and *always* give him a square deal."

Throughout all these years there has been no change in our ideals. As a result, we were compelled to build our own building with three large auction rooms especially adapted for auction sales. Our building is the largest and most up-to-date building in the United States devoted to the fruit auction industry. It is located in the very heart of the fruit and vegetable district, which is the geographical center of the great metropolitan district, comprising a population of 8,000,000 inhabitants.

The United Fruit Company, Florida Citrus Exchange, Porto Rico Fruit Exchange, Stewart Fruit Company, Frank H. Buck Company, Thurston Fruit Company, among the country's largest fruit interests, are some of those who sell through our auction.

If you are not satisfied with the prices you are receiving or with the service you get, you may learn something of interest if you will write us for full particulars about selling at auction.

THE FRUIT AUCTION COMPANY

Established 1896

202-208 FRANKLIN ST.
NEW YORK CITY

Marketing News of Interest

MID-JANUARY reports from the large cities of the East nearly all reported the boxed apple market as "steady" and "firm." In general, demand was said to be moderate and some markets reported it light. At the same time nearly all showed only limited supplies. New York reported limited supplies, moderate demand and firm market.

New York auction prices on January 18 follow: Spitzenbergs, XF large to very large, \$3.35 to \$3.70; medium to small, \$2.80 to \$3.25; fancy large to very large, \$3.05 to \$3.30; medium, \$1.75 to \$2.95; Romes, XF, medium to very small, \$2.60 to \$3.30, mostly \$2.65 to \$2.80; fancy, large to very large, \$2.85 to \$3.00; Delicious, XF, very large, \$4.65 to \$4.90; large, \$3.50 to \$3.90, few \$4.65; fancy, very large, \$3.30 to \$3.95; large, \$2.95 to \$3.30; Winesaps, faced and filled and jumble, \$1.60 to \$1.65; Newtowns, XF, large to very large, \$2.70 to \$3.05; medium, \$2.40 to \$2.75; small to very small, \$1.95 to \$2.55; fancy, large to very large, \$2.70 to \$2.80; medium, \$2.40 to \$2.65; C grade, large to very large, \$2.55 to \$2.65; medium, \$2.20 to \$2.40; small to very small, \$1.85 to \$2.10.

APPLES of the Spokane Valley Growers' Union of Opportunity were packed and marketed at an average cost to the grower of 39 $\frac{3}{4}$ cents a box, compared with 48 $\frac{1}{2}$ cents in 1920, according to Harry Nelson, assistant manager.

The average returns to the grower were considerably higher than in 1920. The Delicious pool brought a total of \$29,310.84; the Winter Banana apples sold for \$27,442.67; Wageners, \$54,166.47; Baldwins, \$98,647, and Grimes Golden, \$6,668.09.

Average net prices to the grower on all grades of apples handled in the pools already closed were: Delicious, \$2.16 $\frac{1}{4}$; Winter Banana, \$1.87 $\frac{1}{4}$; Wagener, \$1.02 $\frac{1}{4}$; Baldwin, \$1.04 $\frac{1}{4}$; Grimes Golden, \$1.32 $\frac{1}{4}$; Maiden Blush, \$1.22 $\frac{1}{4}$; Snow, 85 $\frac{1}{4}$ cents; McIntosh, \$1.52 $\frac{1}{4}$, and Gravenstein, \$1.35 $\frac{1}{4}$.

LESS than 5,000 cars of apples remained in storage in Washington on January 20, according to figures of the Spokane office of the federal bureau of markets. The apples remaining in storage were held at Wenatchee and Yakima, it was reported, the growers of the Spokane Valley and Walla Walla district having shipped all of their fruit.

December car lot shipments for the Northwestern states were reported as follows: Idaho, 287; Montana, 19; Oregon, 992; Washington, 2956. In potato shipments of December, Idaho led, with 839 cars. Washington reported 387 cars and Oregon 102.

AT CONCLUSION of the grape shipping season, traffic chiefs of the Southern Pacific and Santa Fe railroads announced that their lines had hauled to 6200 cities and towns outside of California a total of 422,000 tons of grapes.

valued at \$50, 640,000. The total in cars was 28,800, or 5,300 more than handled last season. The average price per ton was around \$120.

FINAL payment on the 1921 walnut crop has been made to members of the California Walnut Growers' Association. This payment alone amounted to \$2,000,000. Entire expenses of handling the crop are covered by retention of five per cent of the sales price by the association, this even including the one per cent discount allowed cash buyers.

SENT on consignment, under a guarantee of at least \$1 a box net, Heffron & Nicolla recently shipped three cars of Winter Nelis pears from their Sunnyside Valley ranch for London, England. This was said to be the first time a grower of this valley had shipped fruit direct to the London markets.

WASHINGTON

PUYALLUP Valley berry growers received a total of \$1,137,710 for 1921 crops. For King county it is estimated that the crop brought the growers \$2,000,000 and that another \$1,000,000 was obtained by the fruit and berry growers of the Grays Harbor section. The Puyallup returns were under those of the two previous years, but lowered costs are said to have more than offset the difference.

TWENTY-TWO pruning demonstrations, covering 24 communities, were conducted in Yakima county last month under direction of E. G. Wood, extension horticulturist of Washington State College. He had the co-operation of project leaders in each of the communities.

FRUIT crops of the Walla Walla district for 1921 are estimated to have had a value of \$2,100,000. Of the total the apple crop value is placed at \$1,500,000, prunes at \$350,000 and small fruits at \$250,000.

Irrigate!

without cost of pumping and without expensive flume construction, if you have water *below* your land, so situated that you can get a slight fall.

Hill Hydraulic Rams

are made in 12 sizes, 1 inch to 24 inch, delivering capacities to 3,600,000 gallons per day.

They make the water pump itself

Our engineers will advise you. If a ram will work on your project, it will save you money.

Write today for free catalog. R-1 domestic; R-2 irrigation.

Seattle Machine Works
85 W. Lander St.
Seattle, Wash.



SPRAYERS For EVERY NEED

We make right here in Portland the most complete line of fine Sprayers you can find.

**FINEST WORKMANSHIP
BEST MATERIALS**

We'll take in your Old Sprayer on a New, Efficient One.

SPECIAL! We have ten-barrel Sprayers we are offering at only \$20. A bargain you cannot afford to pass up.

Write Us Your Needs
Quality Sprayer Mfg. Co.
245 Grand Ave., Portland, Ore.



This Complete SEED Catalog and Planter's Guide

—lists the finest seeds for the Northwest and tells how best to grow them.

FREE



DIAMOND QUALITY SEEDS

produce the finest vegetables for table or commercial purposes. Acclimated seeds, laboratory tested for germination, selected strains, absolutely true-to-name.

Catalog lists our complete line of Nursery Stock, Poultry, Bee and Garden Supplies.

Demand Diamond Quality Seeds from Your Local Dealer.



BABY CHICKS
Order Now!

Agents for
Buckeye
Incubators and
Brooders
Sharples
Separators

AT PARKER, W. F. Madaris found the winter weather so mild that he planted some orchard trees recently. He is planting 31 acres to soft fruits. There will be 20 acres of peaches, six acres of cherries and five acres of apricots. He plans to grow potatoes and soy beans as fertilizing crops and to pasture the latter with hogs.

▲ ▲ ▲

FIGURES indicating the increased yields gained from proper fertilization of orchards have been given out by the American Fruit Growers, Inc., for its Yakima Valley properties. The steadily increasing yields, attributed almost entirely to use of commercial fertilizers, are thus reported: From 365 acres of apples in 1919, 55,000 boxes; in 1920, 66,000 boxes, and last season 84,000 boxes.

▲ ▲ ▲

PRUNERS put on the winter pruning job recently by the Thompson Fruit Company, at Buena, were hired at the rate of 20 cents an hour, it was reported.

▲ ▲ ▲

JOHN MORRIS HOFF has successfully demonstrated that English walnuts can be grown in Clarke county. He has been growing them for 18 years on his farm near Sara. He now has a grove of about 100 trees, most of them 18 years old, from which he harvested over three tons last year.

▲ ▲ ▲

FIGURES compiled at Sumner are said to show the following average crop productions per acre in the Puyallup Valley last season: Blackberries, six tons; gooseberries, five tons; raspber-

ries, currants and strawberries, three tons; rhubarb, ten tons and asparagus, five tons.

▲ ▲ ▲

AT the annual meeting of the Washington State Horticultural Association these officers were elected: R. H. Kipp, president, Quincy; Dr. L. Geary, first vice-president, Underwood; Paul Weyrauch, second vice-president, Walla Walla; H. L. Douglas, Wenatchee, and C. M. Lockwood, Opportunity, directors.

▲ ▲ ▲

LAST month the Washington Prune Growers' Association sold 250,000 pounds of Clarke county prunes to Holland interests. They were consigned for that country on the steamer *Moerdyk*, which sailed from Portland about two weeks ago. This was the first foreign shipment of prunes made by the association since before the world war. The price was 12½ cents, f. o. b. Vancouver, for 30-40s.

▲ ▲ ▲

GRANDVIEW'S apple exhibit, which took first prize at the Northwest Fruit Exposition in Seattle, was sent to Chicago, where it was displayed in a big store window on Michigan avenue. Thousands of Chicagoans saw and admired the exhibit.

▲ ▲ ▲

LOMBARD & HORSLEY, of the Parker Heights district, at Buena, have announced that they will set out between 25 and 40 acres of peaches in the spring. They will plant Elbertas. These are preferred to the J. H. Hale, say the orchardists, because they require no hand thinning.

▲ ▲ ▲

THE Puyallup & Sumner Fruit Growers' Canning Company sent forth approximately 200,000 jars of Paul's jams for the Christmas trade. This was almost double the amount sent out in 1920, so ready has been the sale of this high-class product of the Northwest.

THE plant of the Chelan Produce Company used for evaporating apples, was recently destroyed by fire, entailing a loss of \$50,000.

Treat Your Soil with Toro Brand Agricultural Sulphur



Improves alkali soil, transforms latent potash and phosphates into available plant foods.

Prevents wire worms, eelworms or nematodes, smutty grain, ants and potato scab. 220 lbs. per acre has increased crops up to 500%.

For dry dusting, use "ANCHOR" Brand Velvet Flowers of Sulphur.

For Lime Sulphur Solution, use DIAMOND "S" Brand Refined Flour Sulphur. Sold by leading dealers.

Write for circulars Nos. 6, 8, and 10, price-list and samples. State for what purpose sulphur is to be used.

SAN FRANCISCO SULPHUR CO.
624 California St. San Francisco, Cal.

*Apples, Pears, Peaches
Potatoes, Onions*

and all kinds of Fruit and Produce Bought for Cash..

Address us as to what you have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.

**More Than
TWENTY-FIVE
THOUSAND
Customers**

Bought trees, plants and shrubs of us last season, and the proof of satisfaction lies in the constant increase not only in volume of business, but in the increased number of old and new customers who buy of us.

We want no one's money whom we cannot satisfy. We value more than all else in our business the hosts of satisfied customers in whose orchards and home grounds our stock is found.

The sins of a dishonest or slipshod nurseryman are soon revealed, and often at a big loss to the customer. It would be wicked of us to engage in this business and solicit your patronage if we failed to assume the responsibilities which go with the nursery business.

Since 1903 at Toppenish, through thick and thin—sometimes awfully thin—when nursery wrecks strewed the landscape—we've stayed by our nursery business and that exclusively—no side lines—and we're here today bigger and better than ever.

Splendid trees—well rooted—fully matured—carefully dug, packed and prepaid to your nearest shipping point—our risk of transportation—that's our only method of doing business.

And they're clean as a whistle, grown on new ground containing no bugs or pests.

Every tree inspected by us and once by the district horticultural deputy inspector.

PLACE YOUR ORDER NOW



**WASHINGTON NURSERY
COMPANY**
TOPPENISH, WASH.

Salesmen Everywhere—More Wanted

F.C. Stettler Mfg Co.
Portland - Oregon

Lithographers
Color Printers
Labels
Cartons
Folding Boxes
Cut Outs
Display Cards
Special Advertising
Stiff Boxes Plain and Fancy

OREGON

THE Cottage Grove cannery last season put up 321 tons of fruits and vegetables. Plans are being considered for enlarging the plant, it is reported. The cannery reported earnings of 20 per cent on its stock, despite unfavorable conditions of the season. ▲ ▲ ▲

EARLY this year the Apple Growers' Association issued a call to its growers at Hood River and other points to begin placing their orders for boxes at once. The bulletin announced that supplies of apple and pear boxes were available at once. ▲ ▲ ▲

UNUSUALLY heavy snowfalls of the winter have not been particularly pleasing to the orchardists of Hood River Valley, but not so with the growers of strawberries. The snows, it is said, have set the stage for a bumper crop of berries. ▲ ▲ ▲

WOMEN of the auxiliary of the Hood River Post, American Legion, were instrumental at Yuletide in sending a lot of Hood River apples and other delectables to disabled ex-service men in the Portland hospitals. ▲ ▲ ▲

NEAR the village of Home, bordering on the Snake River, W. E. Hall has one of the finest and most dependable orchards in the state. His tract, which contains about 125 acres, is in a cove that never sustains damage from frost. Last season Mr. Baker shipped 39 cars of peaches, 17 cars of apples, two cars of grapes, one of apricots and two of asparagus. Ninety acres of his ranch is set to peaches of the Early Crawford, Elberta and J. H. Hale varieties. He has 24 acres in apples and six in grapes. ▲ ▲ ▲

A. C. PETERSON, who had been located at Dallas for some years, more recently as superintendent of the Oregon-Washington district of the California Packing Corporation, has been transferred to an enlarged territory in California, with headquarters at San Francisco. ▲ ▲ ▲

AN INCREASE of \$10,140 in value of the apple crop from a 20-acre orchard of 12-year-old trees is credited to the demonstration work of Fred Bennion, county agent of Umatilla county, and Clayton L. Long, extension horticulturist of Oregon Agricultural College. The orchard is that of J. F. Slover of Freewater, where a three-year programme of pruning, spraying and thinning has been conducted by the two experts. ▲ ▲ ▲

THE five processing plants at Salem are credited with a new record of production for that city in output of fresh fruit and vegetable packs in 1921. The total pack is given as 32,791,232 pounds. The aggregate value of the pack is given as \$2,000,000. ▲ ▲ ▲

BETWEEN 850 and 1000 acres of cover crops were planted in orchards of Lane county. This was the result of a campaign conducted by a horticultural extension committee which urged upon the orchardists this modern means of enriching the soils of their tracts. ▲ ▲ ▲

FRED WRIGHT, berry grower at Hubbard, recently sold his 16-acre ranch to Mrs. Helen Jones of Portland. Wright created two or three near-stampedes in Portland last summer by attempting to put strawberries on the market at a price considerably below prevailing quotations. ▲ ▲ ▲

A MEETING of the North Marion County Berry Growers' Association was held at Woodburn last month. A proposition of President Graves of the Graves Canning Company to take berries on an installment or co-operative plan was received and taken under consideration. ▲ ▲ ▲

A DISH of prunes from a tree 70 years old was recently served at Albany, but the tree in

question stands in the historic Union Point section, three miles south of Brownsville. ▲ ▲ ▲

MARK A. Mayer, owner of one of the largest orchards in the Mosier district, recently presented a tract of 60 acres to the State Highway Commission. The land is on the Columbia River Highway and is to be used as an auto camping ground. ▲ ▲ ▲

IN ONE day the Hood River Canning Company turned out 1000 gallon cans of apples, packed under variety labels of the company, for foreign shipment via the Panama Canal from Portland. ▲ ▲ ▲

THE Dufur Orchard Company reported shipment of 194 cars of apples during the 1921 season, from its orchards at Dufur.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

Notice to Subscribers!

BETTER FRUIT has adopted a policy which will eliminate in the future any "bargain offers" or premiums to subscribers.

In doing so, **BETTER FRUIT** has made it possible for you to receive America's premier fruit journal at the lowest possible cost, taking into consideration the fact that quality will not be lowered a whit.

We have been told many times that timely information contained in an issue of **BETTER FRUIT** has made a fruit grower the cost of a life subscription to the magazine—and then some.

You cannot afford to be without **BETTER FRUIT** if you are in the horticultural game on a large or small scale.

And by establishing a new one-price-to-all-at-all-times, **BETTER FRUIT** is within the means of every grower.

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">COUPON</p> <p>Name</p> <p>Address</p> <p>City State</p> <p>Amt. \$..... Years.....</p> </div>	<p style="text-align: center; margin: 0;">THE NEW RATES:</p> <p>One yearOne Dollar</p> <p>Three years.....Two Dollars</p> <p>Five yearsThree Dollars</p>
---	---

SILVERTON promises to become the center of a walnut growing district. Many farmers have trees enough to supply home needs and commercial plantings are now being started. J. Smith is said to have purchased a 25-acre tract one mile south of Silverton, with the intention of planting it exclusively to walnuts.

CALIFORNIA

LADY APPLES have become a favorite on the farm of Allen Tuffin, near Lotus, following successful experience with this variety. Mr. Tuffin is having 140 five-year-old trees grafted over to Lady apples. He tried out an experimental plot of 50 trees and the apples from these sold last fall at \$3 and \$4 a box, he reported.

UP to about the end of December, 2,551 cars of apples from the Pajaro Valley had been forwarded from the Watsonville station. Of these 756 cars were shipped East. Shippers had on hand less than 100 cars. A year ago at the same time the valley had shipped 2333 cars.

PEAR blight, because of inefficient control work on rented orchards, made rather serious gains during September and October in the Placerville district, according to report of the county horticultural commissioner.

THE Earl Fruit Company is issuing \$2,500,000 of bonds, secured by mortgage on its California holdings. A goodly portion of the funds derived from the bond sale is to be used in development of the Howard Reed Orchard Company property in Yuba county. This consists of 325 acres, planted largely to Bartlett pears.

THE drying plant of the Loma Fruit Company at Watsonville burned recently, together with about 10 tons of dried and drying fruit. The loss is placed at \$20,000, partially covered by insurance.

AT SEBASTOPOL there has been established the Gravenstein Apple Growers' Contest. This competition began December 1 and is to last five years, with the object of discovering methods that bring maximum yields and finding individual high yielding trees to be used as the basis for obtaining better stock.

THE California Almond Growers' Exchange received orders for fully 3000 bags more almonds than it could fill. The second advance has already been made to the growers, who have now received sums ranging from 7 cents a pound for the lower grades to 14 cents for Nonpareils.

CHERRY growers of San Joaquin county recently formed an organization to co-operate with associations already formed in Sonoma and Napa counties. Seven growers, representing 200 acres of bearing trees, signed as charter members.

LAST month at San Diego, Cal., a commission merchant who had packed apples in unlabeled boxes and also in boxes with Oregon labels was assessed a fine of \$50 under provisions of California's standard apple act.

IDAHO

THE Payette Valley Produce Exchange has been incorporated at Payette, with a capital of \$100,000. The purpose is that of giving the grower an opportunity of selling his produce through a sales agency maintaining accurate accounting features. Officers of the exchange are: George Rezac, president; David Jones, vice-president; Clarence Van Deusen, secretary.

DURING the past season 150 cars of lettuce were shipped from Nampa. Lettuce tonnage from this district began with a nine-car movement in 1919 and the shipment of 26 cars in 1920.

FROM the closely affiliated communities of Parma, Roswell, Wilder and Apple Valley, 1921 shipments of fruit and produce were: Apples, 387 cars; fresh prunes, 91 cars; dried prunes, four cars; potatoes, 272 cars; lettuce, 25 cars; onions, one car; honey, three cars.

ACCORDING to figures of the state bureau of plant industry, Idaho has 31,848 acres of land devoted to fruit growing. The value of these lands, including trees, is placed at \$13,212,700.

COMPLAINT was made late in the shipping season by Miles Cannon, state commissioner of agriculture, that he found indications that Eastern commission interests were holding back cash belonging to Idaho apple shippers in order to ease financial conditions in the East.



YOU'LL be surprised at the little cost at which you can make your house look distinctive. The window cut accompanying this ad, is known as the "Queen Anne" design.

For an additional \$15 or \$20 your whole house can have this classy window. Before you finish building send for our catalog. Rovig, 2227 First Avenue South, Seattle "Better Millwork."

Food and Beverage

Make no mistake! Nothing can take the place of Ghirardelli's Ground Chocolate—at your table or on your dealer's shelves. Because Ghirardelli's fills a daily household need—and fulfills every essential of food and beverage.

Ask for Ghirardelli's Ground Chocolate at the store where you do your trading. Never sold in bulk but in cans only. In this way Ghirardelli's retains its flavor and strength—the two most important elements of good chocolate.



Say "Gear-ar-delly"

D. GHIRARDELLI CO.
Since 1852 San Francisco

Send for Recipe Booklet

GHIRARDELLI'S Ground Chocolate

GOOD SEEDS

Grown From Select Stock—None Better—52 years selling good seeds to satisfied customers. Prices below all others. Extra lot free in all orders I fill. **Big free catalogue** has over 700 pictures of vegetables and flowers. Send your and neighbors' addresses.
R. H. SHUMWAY, Rockford, Ill.

With the Poultry

INCUBATOR INVESTMENT

AFTER the poultryman has made up his mind to buy an incubator, he is confronted with the question of makes and sizes. As a general rule, a cheap machine is a poor investment, requiring more attention than a good one and wearing out quicker, besides being less dependable. The value of the machine is small compared with that of the eggs used during the normal life of an incubator. It is poor economy, therefore, to buy a machine which is not reliable. Whenever possible it is well to select the kind of incubator that has given satisfaction in your neighborhood, so that you may get the benefit of the experience of other operators near by.

The best size of incubator to buy varies with numerous circumstances, say poultry specialists of the United States Department of Agriculture. About as much time is required to care for a 60 as for a 300-egg machine; it is usually advisable to get one of at least 150-egg capacity. Special conditions, though, often exist which make smaller machines valuable.

A small machine is often used in connection with a larger one, all eggs being placed in the large machine after the first or second test. Many poultrymen believe that it pays to have an incubator large enough to hatch the bulk of their stock in two or three hatches, so that much time is saved in tending to the incubators and brooders. In addition the chickens are more uniform in size than those hatched when the incubating period extends over a longer time.

A fair estimate for a poultry farm is an incubator of one-egg capacity per hen, provided that about one-half of the flock is to be renewed yearly and no outside hatching is carried on. The larger machines cost less in proportion to their capacity than the smaller ones.

EARLY HATCHING

FOR those who do not run their own incubator there are, of course, two methods of keeping up their flocks—either by the old accepted way of hatching with one's own hens or through purchase of baby chicks or pullets. For those who maintain a flock of good size there is a lot to be said in favor of purchasing baby chicks from a reliable source. With the average small-farm flock, where hens of a general purpose breed are kept, it is generally advisable to let the hens do the hatching.

Whatever the method of hatching, it is most important that it be done at the right time of year. The aim should be to hatch the chicks at such a time as will allow the pullets to reach their full development and begin laying in October or November, as these earlier maturing pullets must be depended upon very largely for the fall and winter egg production. Late-hatched chicks do not mature in time to produce fall and winter eggs nor do they live or grow so well during the hot weather.

VIGOROUS CHICKS

IT IS hardly possible to put too much emphasis upon the importance of proper feeding of baby chicks to give them a good, healthy start and to put them in a healthy, vigorous, growing condition. Chick diseases are prevented if care is taken in the method of feeding. The best of grains and prepared foods should be used for chicks. Regularity in feeding is immensely important. Pure, clean water should be available. In the brooder facilities, orderliness and cleanliness should prevail. Check over your plans and equipment to make sure that you are prepared to give the chicks the right start in incubation, brooding and feeding.

IF YOU are one of those who derive nothing, but discouragement from the fact that egg

prices fell to unusually low levels this winter you are not very loyal to the game and might about as well drop out.

▲ ▲ ▲
DID you know that the government experts have acknowledged that use of artificial lights in the poultry house increases the egg output? This method is being tried in England perhaps more widely than in this country. The real object, it should be remembered, is primarily that of getting the hens and pullets to feed longer than they otherwise would during the short winter days.

▲ ▲ ▲
IN BUILDING the poultry house the site should be on light, porous soil, if possible. A slope that provides good air and water drainage is preferable. Exposure to sunshine and protection from winds are other important points. These problems are fully discussed in a new bulletin that may be had on request, from the Oregon Agricultural College Experiment Station, at Corvallis.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.
GET OUR PRICES

COLUMBIA NURSERY COMPANY

1490 Union Ave., No. Portland, Ore.

Arrow Carbolineum

(Formerly *Avenarius Carbolineum*)

Protects poultry against vermin—
Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING COMPANY

222 E. Water St. Portland, Oregon

Are You the Man?

If so, BETTER FRUIT offers you a chance to make good money

We want a representative in every fruit-growing community. In every such community there is some individual with a little time each month to spare, who, by representing BETTER FRUIT, can make a good income.

Perhaps it will be an elderly man?

A young fruit-grower just getting started?

A wife who wants to help out?

An ambitious boy or girl who wants to make extra money?

We want someone in *your* community to become our *permanent* representative—to secure new subscriptions for us and renew old ones.

We want two or three representatives in the Hood River Valley. -Several in Yakima and Wenatchee—in the Willamette Valley, Rogue River, etc. In fact we want *permanent* representatives in every fruit district of the West.

Our proposition is a good one. Are you the man or woman for the job?

Write today, stating your qualifications.

BETTER FRUIT PUBLISHING COMPANY
TWELFTH AND JEFFERSON STREETS PORTLAND, OREGON

An Honest Incubator At an Honest Price

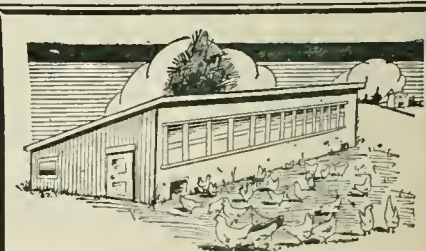
Hot Water, Copper Tank, Self Regulation, Large Oil Tank, Safety Burner, THREE Walled, Western Red Cedar Construction. From 60 to 4000 Egg Capacity 60 days FREE TRIAL. Electric and Oil Heated

Brooders Get our catalogue and free poultry helps
St. Helens Incubator Co. Centralia, Washington

BABY CHIX

Reduced Prices on White Leghorns, Reds, Barred Rocks, White Rocks, Minorcas and Anconas. Booking orders now. Postal secures FREE catalog. Write today.

C. N. NEEDHAM
SALEM, OREGON



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Our Inquiry Department

IN a future issue please state your opinion as to the benefit of feeding apples to laying hens during the winter months.—J. B. F., Oregon.

Even good, sound apples have no virtue over the much less expensive green foods recommended for the hens' winter diet. But the almost invariable trouble in this connection is that apples carrying decayed spots are given the hens. The proportion of these usually increases, in fact, as the season grows later. Hens are not like hogs in being scavengers. They should never be fed rotten apples. This, we judge, gives you an adequate answer, for it is entirely unlikely that you or any other readers care to feed sound apples to their poultry.

▲ ▲ ▲

I WANT to sow clover for cover crop in some fall wheat I have on my place. When should I sow it?—H. J. C., Washington.

As you are in western Washington you will find the best time to sow the clover comes this month. Fall wheat makes an excellent nurse crop so you should have little trouble in getting a good stand. Readers living east of the mountains will do well to wait until about the first or second weeks in March.

Bees for Pollination

By H. A. SCULLEN

Specialist in Bee Culture, Oregon Agricultural College

FREQUENTLY we are asked by orchard owners and managers how many colonies are necessary for proper pollination of a given acreage. This is not the vital question, since one strong colony will do more pollenizing than 10 weak ones.

The normal colony should come through the winter with a working force in early February of close to 15,000 bees. The attempt then should be to build this force up to 50,000 or more. Good heavy-laying, standard Italian queens are doubtless the most important requisite.

Next it is highly important that the queens be provided with conditions favorable for maximum brood rearing, during the early spring. The first condition necessary is ample stores. The queen tends to stop egg laying when the stores in the hive drop to approximately 15 pounds. It is a good practice to see that a surplus beyond this amount is always present.

With sufficient stores and favorable conditions, a good queen will during late March find the one-story, ten-frame hive too small, so will be unable to lay to her full capacity. It is important to remember that the workers hatched from eggs laid three weeks before fruit bloom are the bees which will do the bulk of the pollenizing and for

that reason it is extremely important to have the queen laying to her maximum capacity at that time.

When colonies have come through the winter in good condition, and the weather has permitted them to gather considerable nectar from the maples, they are very apt to make preparations for swarming about the second week of April, which, if not prevented, will greatly lessen their number of field workers. It is, therefore, of extreme importance that the colony not only be built up to the maximum strength, but that it be kept from dissipating this strength in swarming just before or at the starting of fruit bloom.

Some of the important factors in swarm prevention are: Young queens, not over two years old, preferably only one year old; a minimum of drone comb, resulting in a minimum number of drones in the hive; sufficient ventilation; a moderate amount of shade during the hottest part of the day; sufficient brood rearing room, that is, two ten-story hives or a larger one-story hive.

Another item to consider is location of the bees in the orchard. In this connection the writer would suggest that although the bees under certain conditions will go several miles for nectar, they will do more efficient pollenizing if they are not compelled to go over one-half mile.

They should be so located that it would not be necessary to drive or work horses directly in front of the hive. It would also be to an advantage to have the prevailing winds blowing from the orchard toward the bees. The bees prefer to fly light against the wind and loaded with the wind. This would assist in getting the bees to work on the owner's orchard in preference to the neighbors, if it is possible to influence them at all.

In order that the bees may take advantage of every opportunity to work on the fruit bloom during unsettled weather conditions, it would be advisable to have no shade over them during the period of pollenizing, so they will be attracted out whenever the sun appears.

From what has been said, one can readily see the necessity of having the bees under the care of some one who is familiar with their management in order to get good results, and avoid loss from disease, swarming and other factors.

If the owner is not experienced in managing bees properly, it would be more economical to turn them over to a practical bee keeper to care for or to dispose of the bees and pay a bee keeper to move bees to the orchard during blooming period. The usual charge for the latter ranges from \$3.00 to

\$5.00 a colony, depending upon the difficulty in moving the bees to and from the orchard. When bees are run on shares by another the crop and increase are divided equally between the owner and manager, in which case the owner furnishes all necessary supers and other equipment. If the manager must supply extra equipment, he must receive a higher per cent, say three-fourths of the crop.

WANTED!

Capable working foreman for apple ranch. Must board men. Only experienced men need apply. Address 2349 West Twenty-third Street, Los Angeles, California.



Helpful Books on Home Building
Craftsman Bungalows, 1922 Edition De Luxe. 112 pages of new plans and building ideas for those who crave distinctive homes. Gives plans, photos of interiors, exteriors, size, cost, etc., of scores of artistic bungalows costing from \$800 to \$8000 and suitable for any climate. Largest bungalow book published. Postpaid, \$1.00.

Exclusive Colonial Bungalows and Residence Designs. Most original and artistic plan book ever printed on this beautiful style of architecture. Profusely illustrated. Postpaid 50 cents. Order these books today. Money back if unsatisfied.

YOHO & MERRITT
Craftsman Designers

202 Empire Bldg., Seattle, Wash.

RELIABLE NURSERY PRODUCTS

Large assortment of the best varieties in Fruit and Nut Trees. Small Fruits, Shade and Ornamental Trees, Shrubby, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department. Planting plans furnished for residence grounds. large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Orenco, Ore.
Opportunities for More Salesmen



SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester
SIMONS & CO., LTD., Glasgow
GARCIA, JACOBS & CO., London
SIMONS (Southampton) LIMITED, Southampton
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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

TREES—All kinds of fruit and ornamental trees, vines, etc. Growers of general nursery stock. Lowest quotations given on application. Send us your want list. Can also use a few good salesmen. Albany Nurseries, Albany, Ore.

CORY THORNLESS BLACKBERRY—Best of all; extra large, vigorous plants ready; satisfaction guaranteed; illustrated price list. Write Chas. E. Mortenson, Lodi, California.

CORY THORNLESS BLACKBERRY—Large, delicious. You get well rooted plants true to name from Pioneer grower. Wm. Mortenson, Rt. 1, Lodi, California.

LOGANBERRIES, Raspberries, Strawberries: Inspected, low price, best quality. Red Feather Berry Farm, Clackamas, Oregon.

LOGANBERRY PLANTS—50,000 choice plants shipped direct from one of the best fields in the state. Write for unusual low price and interesting information how to plant and cultivate. Harry Lanum, Salem, Oregon.

INSPECTED STRAWBERRY PLANTS—Improved New Oregon-Ettersburg 121; \$5.00 per thousand. Large, vigorous and healthy. Christian Arnesen, Canby, Oregon.

CUTHBERT RED RASPBERRY PLANTS—\$1.25 per 100, or \$8.00 per 1000, F. O. B. Alvadore, Oregon. E. P. Saunders, Alvadore, Oregon.

BEEES

BOOKING ORDERS now for spring delivery. Virgins, golden and leather-color Italian queens; bees by the pound and nuclei. Write for prices; circular free. A. J. Pinard, 440 No. Sixth St., San Jose, Calif.

BEEES AND QUEENS—Keep bees to pollenize your fruit. Get more and better fruit. Make a profit off the fruit and bees too. Write for circulars. Nueces County Apiaries, Calallen, Texas.

"SUPERIOR" Foundation (Weed Process) and "Everything in Bee Supplies." Superior Honey Company, Ogden, Utah.

POULTRY

BABY CHICKS—The kind that grow into healthy, vigorous, egg-producing hens. R. I. Reds, Barred Rocks and White Leghorns. Order now before our dates are all filled. Prices: R. I. Reds and Barred Rocks, \$25 per hundred; White Leghorns, \$20 per hundred. Write for prices on larger numbers. Portland Seed Company, 180 Front Street, Portland, Oregon.

BABY CHICKS—S. C. Rhode Island Reds, \$22.50 per 100; S. C. White Leghorns, \$18 per 100; all sold to April 6. Order now from old and established breeders who have made good on the merits of their stock. Maple Brook Poultry Farm, Southworth, Wash., Box 3.

WHITE LEGHORN Baby Chicks from egg machines, Corvallis bred. The place that produces world-record makers. Vigorous, heavy-laying, free range stock. Pre-war prices. Oregon Corvallis Hatchery, Corvallis, Oregon.

BABY CHICKS—Reduced prices on White Leghorns, Reds, Barred Rocks, White Rocks, Minorcas and Anconas. Booking orders now. Postal secures Free catalog. Write today. C. N. Needham, Salem, Oregon.

WHITE WANDOTTES—Egg Bred Males. Size and quality backed by high official records. A. Gronewald, The Dalles, Oregon.

WINNERS—R. I. Reds (both combs), Toulouse Geese, Bronze Turkeys; stock and eggs for sale. J. Nonnemacher, Rt. 3, Yakima, Wash.

CHOICE Mammoth Bronze Turkey Toms, \$10. Mrs. Amelia Reimers, Eagle, Idaho.

REAL ESTATE

FOR SALE—Fine orchard in the White Salmon Valley fruit district. About 14 acres in pears and 15 acres in apples, all commercial varieties, 6 to 13 years old; \$5,000 storage and packing house, other buildings; all necessary machinery and implements; plenty spring water; about 55 acres in farm; 2 miles from station on fine road; price \$25,000, with terms, or \$21,000 cash. Other interests compel non-resident owner to sell. Write for more particulars to P. O. Box 8, Underwood, Wash.

FORTY-THREE ACRES—Upper Hood River Valley, on new Loop Road around Mt. Hood; 15 acres commercial orchard, 10 years old, just coming into full bearing; 2 acres strawberries; 3 acres alfalfa; 4 acres under plow; fine potato land. Two good houses; two barns, one used for packing house; good stream, some free water; every acre under irrigation ditch; two miles from town; depot, stores, grade and high schools, church and library. One of choicest locations in upper valley. Fine view of Mt. Hood and Mt. Adams. Price \$15,000, \$6,000 cash. M. J. C., care Better Fruit.

BARGAIN—Fine 13-acre apple orchard, planted to Delicious, Grimes Golden and Jonathans; eleven years old; running water; well located; this would make an ideal fruit and poultry ranch. On good county road one mile from good educational town. For further particulars and price write Box G, Philomath, Benton County, Oregon.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables, hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Wash.

FOR SALE—62-acre farm, 48 miles south of Portland; running water; horses, cattle, machinery and furniture. A. H. Koppang, Silverton, Ore.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FOR SALE—Apple orchard, commencing to bear; finest box varieties; highest quality attained. Bolling Hall, Waynesville, N. C.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

TO LEASE—35 to 200 acres of first class fruit land on shares. Martin Bros., Brownsville, Ore.

MISCELLANEOUS

TRACTOR BARGAINS—Cletrac "W," only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Badley, 425 E. Morrison, St., Portland, Oregon.

WANTED—To examine your orchard for you before you buy. I saved one man \$5000 on a \$14,000 deal. To look after orchards of non-resident owners. Many are poorly cared for and rapidly depreciating in value. Private pruning demonstrations and consultations given. Luke Powell, consulting horticulturist, Yakima, Wn.

WALL BOARD—Write for samples of Washington plaster wall board; won't warp, won't burn. Manufactured by Washington Building Products Co., 6851 E. Marginal Way, Seattle, Wash.

SWEET CLOVER SEED for sale—Buy direct from the producer and save money. Write for samples and prices. Address Geo. Forest, Standish, California.

HONEY—Finest table honey: "Western Blossom" brand, in 6-pound tin can, postpaid for only \$1.25 up to fourth zone; absolutely unadulterated—just as the bees made it. Spokane Seed Co., 906 First Ave., Spokane Wash.

TOBACCO—1919 leaf best chewing, three pounds, \$1; ten, \$3; chewing and smoking, ten, \$2.50; regular smoking, ten, \$1.50; fifty, \$6; satisfaction guaranteed. Producers' Distributors, Murray, Ky.

KENTUCKY LEAF TOBACCO—3 years old, nature cured. Don't send a penny; pay for tobacco and postage on arrival. Extra fine quality chewing or smoking, 10 lbs., \$3.00; medium quality smoking, 10 lbs., \$1.25. Farmers' Union, D-65, Hawesville, Ky.

TOBACCO—Kentucky natural leaf chewing and smoking; rich, ripe, mellow; two years old; aged in wood; 10 lbs., \$3; 20 lbs., \$5; sample, 20c. Maddox Bros., Dept. 22, Mayfield, Ky.

TOBACCO, 1919 LEAF SELECT—Chewing, 3 lbs., \$1.00; 10 lbs., \$3.00; chewing and smoking, 10 lbs., \$2.50; regular smoking, 10 lbs., \$1.50; guaranteed. Producers' Distributors, Murray, Ky.

HOMESPUN TOBACCO—Chewing, 10 pounds, \$2.50; 20 pounds, \$4; smoking, 10 pounds, \$2; 20 pounds, \$3.50. Farmers' Union, Mayfield, Ky.

FOR SALE—Hubam annual sweet clover; scarified seed; genuine Hughes strain; Free Sample. Jas. H. Kitchen, Rt. 5, Springfield, Ohio.

HONEY—Pure, First Quality Yakima Valley alfalfa, sweet clover honey; direct from producer. Send for circular and prices. Oliver Sires, Wapato, Washington.

HUBAM Annual White Sweet Clover Seed; inspected by county agent, Albert Day, Newtown, Ohio.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. **SALEM NURSERY CO.**
427 Oregon Building Salem, Oregon

POSITIONS

WANTED—Position as orchard manager; college graduate; married and life experience in orchard work; now running large orchard in northwest. Address M. P., care Better Fruit.

\$135 MONTH COMMENCE. U. S. government railway mail clerks. Men, boys over 17; steady; Vacations; list positions free. Write today sure. Franklin Institute, Dept. A 106, Rochester, N. Y.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street
SALEM, OREGON

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.
Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The ARCADY Company Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 1214 Jefferson St., Portland, Oregon

Also PRINTING
MULTIGRAPHING
ADDRESSING
MAILING
MAILING LISTS

MAIN
8829

THIS PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT

THE WORLD — OUR ORCHARD

PLAYING THE GAME

NEVER in the history of the fruit trade has any concern made heavier losses than we did last season in the apple deal. This is a matter well known to all the fruit trade of the United States. It is, therefore, more than gratifying to us to announce the continuance of our policy of doing business on the same basis, regardless of whether we win or lose.

We do not wish to appear egotistical, nor do we wish to put ourselves on a pedestal of superiority over our friends and competitors. However, we can look back upon our business experience of last year with pride. The policy of this firm is known throughout the world—wherever a single package of fruit or produce is handled—in a commercial way.

The code of ethics employed by this firm is based upon the American ideal of the square deal.

When Moses received the ten commandments and brought them from the mountain to the chosen people, the fruit trade was not taken into consideration. If it had been, we are quite sure that there would have been woven in much pertaining to the fruit business, and written thus, to the everlasting honor and glory of a great and grand industry.

1. Thou shalt play the game straight, irrespective of consequences.
2. Thou shalt pay all drafts, regardless of market conditions upon arrival of cars.
3. Thou shalt back thy judgment with thine own coin.
4. Thou shalt not turn down any cars, unless thy shipper is actually trying to defraud thee.
5. Thou shalt consider a contract a contract and which is made not to be broken, no matter what the cause.
6. Thou shalt consider thy firm's good name thy biggest asset.
7. Thou shalt consider it a privilege to lose, from time to time, for as long as thou canst take a loss without a kick, thou art a good sport and deserveth success.
8. Thou shalt keep one set of books, so when thy shipper calls on thee and desires to examine thy accounts, thou canst look him straight in the face and tell him to go as far as he likes.
9. Thou shalt never overquote the market, thereby giving false witness against thy neighbor, who has troubles enough of his own and which may induce the husbandman to ship goods to thee which he could have sold at higher prices elsewhere.
10. Thou shalt not covet thy neighbor's business, for there is enough for everybody and then some.
11. Thou shalt particularly take care of the goods sent to thee on consignment by thy fellow man, who may be thousands of miles away from thy business abode, but who depends upon thy honor and wisdom to see that he receives proper compensation for the harvest made by the sweat of his brow.

By playing the game according to these commandments, thou wilt live long in the land and wilt earn a heritage of which thy sons will be proud when thou art laid to rest among thy fathers for, after all, a good name is greater than worldly riches.

Stienhardt & Kelly

273-277 Washington Street

NEW YORK

102-106 Warren Street

Cordoba, 2260 Buenos Aires
ARGENTINE

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

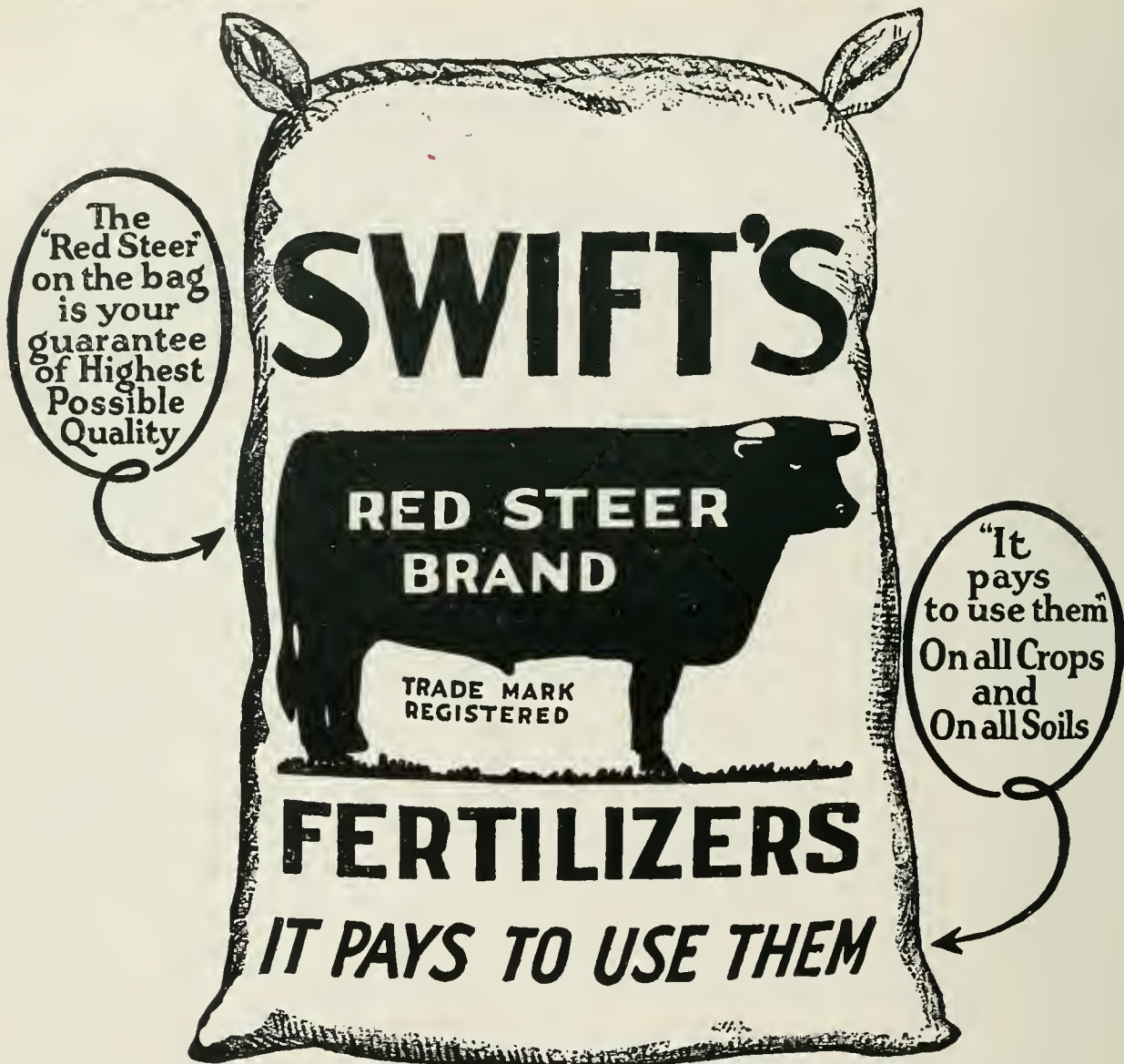
Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.





The right Fertilizer for your Crop

For over fifty years Swift & Company has steadily maintained a reputation of making each Swift product the best of its kind. This reputation stands back of each and every bag of Swift's Red Steer Fertilizer.

By years of research and experience Swift & Company knows the right fertilizer requirements of each crop.

Swift's Red Steer Orchard Dressing is especially recommended for orchards and small fruits. Swift's Red Steer Fertilizer analyzing 6%

ammonia, 7% phosphoric acid and 8% potash is particularly suited for strawberries.

There is a brand of Swift's Red Steer Fertilizers made especially for each crop—truck, potatoes, hops, corn and other crops.

We can also supply nitrate of soda, sulphate of ammonia, acid phosphate, tankage, bone meal, etc.

See our local dealer for your requirements or write us.

Swift & Company, Dept. 531
Fertilizer Department: No. Portland, Ore.

Dealers who are now selling or could sell fertilizers should write for our proposition. Your territory may be open.

“ I T P A Y S T O U S E T H E M ”

BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

March
1922



RAINIER APPLE

(Color Plates Courtesy Washington Nursery)

Features of This Issue:

Pruning Studies in California
Approved Culture of Red Raspberries
Soil Fertility as Related to Orchardng
Miscible Oils and the Leaf Roller
Gummosis of the Cherry

20 Cents
The Single Copy

1 2

Good News for Farmers!

The Du Pont Company announces
a new farm dynamite—

more per dollar

DU PONT CHEMICAL ENGINEERS have developed a new dynamite, "Pacific Stumping"—and it will save you a lot of money. It will blow out $\frac{1}{2}$ more stumps per dollar—blast $\frac{1}{2}$ more boulders per dollar—plant $\frac{1}{2}$ more trees per dollar.

Standard stumping powders are packed 85 sticks to the case. For 50 cents more, you can buy a case containing 130 sticks of Pacific Stumping—each stick of which will do equal work with any other stumping powder. This means that Pacific Stumping costs you $2\frac{1}{2}$ cents (or 30%) less per stick.

This new dynamite makes stump blasting in the Northwest a far less expensive operation—and will undoubtedly make possible a great increase in land-clearing activities in this district.

See your local hardware or general store merchant now regarding your season's supply of Pacific Stumping Powder. Write us for booklet, "The Development of Logged-Off Lands," which gives full instructions for its use.

*Ask your County Agent
how the Federal Farm
Loan System will help
you clear your land.*

E. I. DU PONT DE NEMOURS & CO., Inc.

Spokane

Seattle

Portland

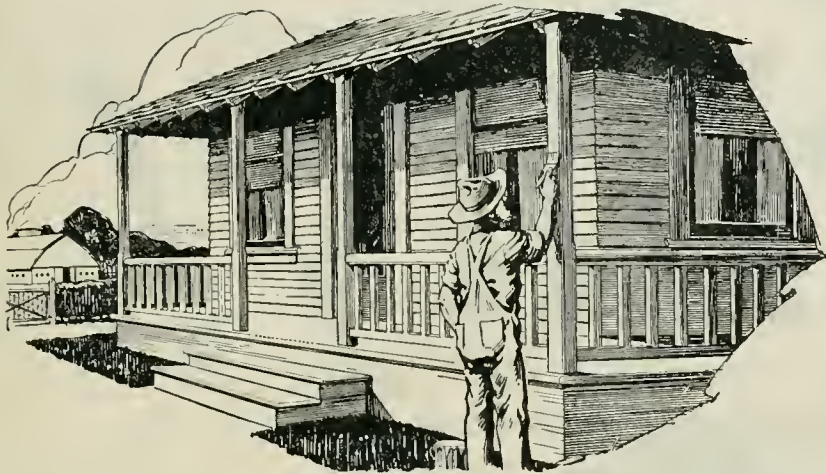
NON-HEADACHE

DU PONT

NON-FREEZING

PACIFIC

STUMPING POWDER



"Save the surface and you save all" — *Don't rot!*

How to Save in Painting

—Farm Buildings, Machinery, Etc.

REMEMBER first, it is what paint covers that you want to save—not merely a few cents per gallon in the purchase price of paint.

Note how the best paint spreads easier and covers more square yards than cheap paint does.

Figure in the extra gallons of cheap paint that you must buy, and the extra cost of application.

It means that cheap paint costs just as much as good paint on the house or barn.

The best paint then gives five or more years' protection to your property investment if properly applied. Cheap paint, on the average, starts cracking in twelve months. Which paint costs less?

The paints we specify for farm use are the result of 72 years' experience in making paints and varnishes for every purpose. Made to

stand the peculiarities of western weather.

The best materials—PURE PIONEER WHITE LEAD, pure linseed oil, zinc and color—are combined with long-time skill, in scientifically exact proportions.

Our white lead base must pass through a silk screen with 40,000 meshes to the square inch. A patented purifier makes it "whiter," so Fuller colors are exceptionally clear. The paint when applied on the house is a beautiful, elastic, tough, protective coat.

Such paint costs but a trifle more to buy per gallon and is five or more times more economical in service rendered.

Cheap paints are costly—in the long run—good paints save money—they protect. Remember that when you buy paint. Don't allow surfaces to rot. It costs less to paint them.

Fuller's

SPECIFICATION

Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint

M'd. by W. P. FULLER & CO., San Francisco
Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and
PIONEER WHITE LEAD for 72 Years
Established 1849

Branches in 16 Cities in the West
Dealers Everywhere



Advice on Painting Free

If you want to do your own work and get the best results, ask our Specification Department for free advice.

We'll tell you how to treat old paint, how many coats to use, what kind of brush, etc.

Use Fuller Service as well as Fuller Paints and Varnishes to insure good work.

HOUSE PAINT: Fuller's Pure Prepared Paint, Phoenix Pure Paint, for Painting Houses. The purest, best protective and most durable paint manufactured—32 colors.

BARN AND ROOF PAINT: A protective coating for barns, roofs, fences. Dries with a good gloss and wears. Economical in cost and dependable in quality. Six colors to select from.

FLOOR PAINT: Fuller's Rubber-Cement Floor Paint—sanitary, waterproof and durable paint for floors of kitchens, closets, etc. Attractive in color and gloss. Dries hard over night. Made in 12 colors.

IMPLEMENT PAINT: Fuller's Pacific Wagon Paint adapted for repainting agricultural implements, farm wagons, windmills and farm machinery. A glossy, durable finish offered in 7 colors.

Free Books Mail the Coupon

Send the coupon for "Save the Surface," a free book that tells why good paint is vitally important on your place—why your house, barn, silo, and machinery should be protected. We'll send with it our small booklet of Fuller's Specification Farm Paints and Varnishes. You need both books. Send for them now.

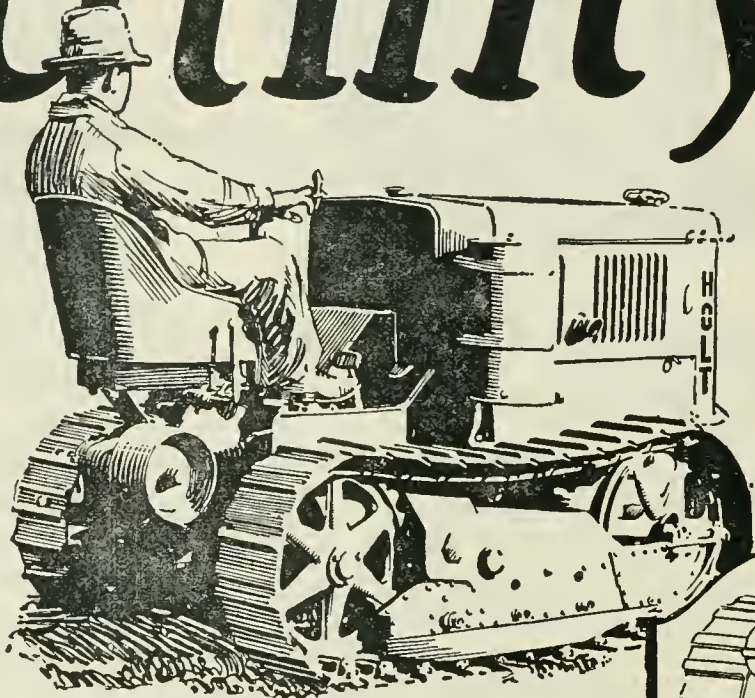


W. P. Fuller & Co.
Dept. F-21 San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your small booklet of farm paints and varnishes.

Name.....
Address.....
City..... State.....

Utility!



—all around usefulness
a striking feature of

CATERPILLAR

T-35 Tractor

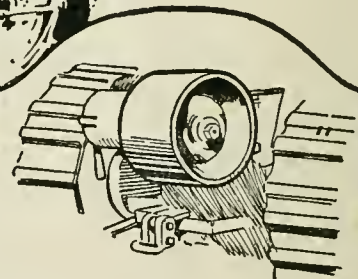
The small size—light weight—compact power—rugged strength and dependability of this machine adapt it for all power work—tractive and stationary.

If you farm a limited acreage, the T-35 Tractor will do all the work—plowing, harrowing, discing, leveling and other jobs. If you are a "big farmer" the T-35 Tractor will do the light jobs quickly and economically, in place of big tractors or horses. It is ideal for orchards, vineyards and berry fields—for road work, hauling and contracting.

Whatever your power needs, there is a size of "Caterpillar" Tractor to meet them. Write for full information.

THE HOLT MANUFACTURING CO.

Factories at
Spokane, Washington
Stockton, Calif. Peoria, Ill.



For belt jobs

The belt pulley unit extends the usefulness of the T-35 Tractor. With it you can pump water, grind feed, saw wood and do other belt jobs easily and quickly. The belt pulley is an independent unit that bolts on rear end of the transmission case. It operates at 3000 feet per minute belt speed.

There's
only one
Caterpillar
Holt
builds it

Oregon Representative, J. W. Hill, Henry Building, Portland



BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOLUME XVI

PORTLAND, OREGON, MARCH, 1922

NUMBER 9

Pruning Studies in California

By WARREN P. TUFTS

Assistant Professor of Pomology, University of California

STYLES in pruning change, perhaps not as often as do fashions in women's wearing apparel, nevertheless, as one travels from section to section, the fact is emphasized that there is apparently a great difference of opinion as to how fruit trees should be handled in this respect.

Although generalizations are dangerous, the statement will be hazarded that the California pruning method has, in the past, been characterized by the severity of the cutting. In some fruit sections of the West, the opposite extreme of little or no pruning may undoubtedly be found.

The cutting of young trees is primarily designed to influence the forms, however, the functions of the plant are also profoundly altered. "If you would have your trees stocky, strong, and mechanically able to support heavy crops, prune your orchard severely for at least four years after planting," has been the advice commonly heard in nearly all deciduous fruit growing sections of California.

Considered from the standpoint of plant nutrition, it would seem that annually to remove a large portion of the leaf bearing area, which is the factory of food production for the tree, in addition to the loss of stored food reserves, would of itself tend to weaken the life processes of the plant. The fact, however, that orchard trees have in almost all cases responded to the heavy cutting with an exuberant vegetative growth the following season has misled many to believe that annual shoot growth alone is the true index of the plant's vigor.

Is it not, however, more accurate to measure the tree's activity by the total weight of wood laid down over the whole plant?

Experiments by the California Experiment Station have shown that a very close correlation exists between the diameter of the trunk of a non-bearing tree and the weight of both top and root. Any pruning practice which gives a greater girth in the young tree may be safely taken as an index of a larger development over the entire plant.

Careful experiments and studies in pruning effects on deciduous fruit trees have been made in California in recent years, largely under the lead of Professor Tufts. These have convinced this widely known pomologist and many others that certain pruning practices of the past have not been founded on sound principles. The findings for instance, are against severe heading back of young trees and favor the "long system" of pruning, in general. These findings are making a strong impression on California growers of deciduous fruits, particularly where there is little or no irrigation. The report here given deserves unbiased study by all readers of BETTER FRUIT and is of particular import to those in unirrigated sections.

The facts just presented perhaps rather completely explode another tradition heard in many fruit sections, namely, that heavy cutting of the top, although perhaps reducing the size of the above-ground parts, nevertheless results in renewed and strengthened root development.

RESULTS of apple pruning investigations in England, Oregon, West Virginia and other sections show that the less the tree is pruned the larger and heavier it

becomes. In order to ascertain whether these results hold equally well with other deciduous fruits careful measurements were made in the California Experiment Station orchards at Davis, California.

The experimental trees were planted in deep, rich, alluvial loam soil, had not been irrigated up to the time of these measurements and, with the exception of the pruning, had received identical cultural treatment. Table No. 1 briefly summarizes the results of the different pruning treatments after one season's growth.

In order to secure data on the stockiness of branches as influenced by different pruning treatments, measurements were made on apricot trees which had been only lightly pruned, others which had been moderately, and still others which had been severely pruned. All measurements were made at a height of three feet from the ground, the trees having been evenly headed at the time of planting. The results of these measurements are exactly in accord with those made on the trunk. Certain German investigators have reported similar findings with apple branches.

The figures of Table 2 summarize these observations.

TABLE II.
INFLUENCE OF PRUNING ON
STOCKINESS OF BRANCHES

Average Increase in Circumference in Centimeters.			
Fruit	Heavily Pruned	Moderately Pruned	Lightly Pruned
Apple	8.4 Cm.	9.5 Cm.	11.7 Cm.
Apricot	3.85	4.66	5.09

TABLE I.
INFLUENCE OF PRUNING ON STOCKINESS OF TRUNK
Average Increase in Circumference in Centimeters.

Kind of Fruit	Pruned Severely	Pruned Moderately	Pruned Lightly
	Apricot	11.7 Cm.	12.6 Cm.
Cherry	10.0	11.2	12.3
Peach	12.0	16.9	19.4
Pear	8.7	9.1	9.7
Plum (Japanese)	6.3	10.4	11.3
Plum (European)	7.2	8.8	9.4
Prune	6.2	7.1	8.4
Average	8.9	10.9	12.3

Another set of measurements presents data perhaps still more interesting and instructive. Several hundred strongly vegetative shoots of two, three and four-year-old French prune and Bartlett pear trees were selected and comparable branches headed in such a way as to leave 12, 24 and 36 inches of the new growth. Table 3 summarizes the results obtained on the prune trees. Similar results were obtained from the pear trees.

These figures seem to indicate that heading-back new growth on young non-bearing trees reduces, in direct ratio to its severity, resultant new shoot growth, stockiness and number of spurs formed.

the Oregon Experiment Station have already yielded results which emphasize this statement.

In order better to comprehend certain plant responses, facts should be recalled concerning the annual cycle of growth and development of the fruit tree. The season's first burst of growth—blossoms, leaves, and new shoots—is made largely at the expense of plant food reserves, normally stored in the tree during the preceding summer and fall. These stored plant reserves are thus very materially used up during the early part of the summer and as a consequence concentration of the cell sap is lowest at this time. The crude sap

IT HAS been demonstrated many times that heavy cutting during the dormant period will result in rank succulent vegetative growth the following season. Unfortunately many growers have mistaken these rapidly growing shoots as a sure indication of a healthy and vigorous condition of the tree. Pruning, however, may be so severe that the proper balance between the vegetative and reproductive functions are disturbed to such an extent that the new growth will take practically all the plant's energies to maintain and extend it far beyond the proper time for the termination of such development and the beginning of storage of synthesized plant foods.

Excessive pruning results in rank vegetative growth near the pruning cut which, with its soft, succulent, spongy tissue, is probably wasteful in its use of soil moisture and also in times of stress may even withdraw water from the green fruit. If soil moisture conditions are not remedied shortly the tissues of the wilted, immature fruit become irreparably injured. In sections of limited rainfall, or where irrigation water is not plentiful, the question of what type of tissue uses the greatest amount of water is most important. The data secured from careful experimentation are meagre and seem somewhat contradictory, but from field observations it appears that trees and especially vegetables with very succulent growth are those which suffer first from a deficiency of soil moisture.

The later the tree continues its active prolongation of new wood during the season, the less is the opportunity to store plant food reserves and, therefore, the less is the concentration of the cell sap. It

(Continued on page 23)

TABLE III.
INFLUENCE OF SEVERITY OF PRUNING ON DEVELOPMENT OF ONE-YEAR SHOOTS OF FRENCH PRUNE

Shoots of Equal Size Pruned to	12 inches	24 inches	36 inches
Circumference at Base	.57 inches	.74 inches	.92 inches
Number of Spurs Formed	4.68	9.43	14.30
Length of New Shoots	154 inches	230 inches	284 inches

SUMMER pruning non-bearing trees, whether performed early or late in the season, exerts a marked influence on vigor as measured by trunk increments. During the summer of 1916 four blocks of flourishing two-year-old trees consisting of apricots, cherries, peaches, pears, plums (Japanese and European) and prunes were subjected to various treatments.

Block A (152 trees) received no summer pruning, and the average increase of trunks was 7.5 centimeters. Block B (252 trees) received a moderate thinning-out and heading-back on May 4, and the average increase of the trunks was 6.5 centimeters. Block C (96 trees) received a moderate thinning-out and heading-back on May 4, and again on July 11, and the average increase of the trunks was 5.2 centimeters. Block D (30 trees) received a moderate thinning-out and heading-back on August 8, and the average increase of the trunks was 5.4 centimeters. There were only apricots, cherries and pears in this block.

From the figures just presented it seems that summer pruning at any time is devitalizing, and that midsummer cutting is more weakening than that done during the early part of the season. It is to be further noted that two comparatively early summer prunings were only a little more weakening than one given late in the growing period.

It is not the intention to give the impression that little or no pruning of young trees is desirable, but rather that the orchardist should bear in mind the observations herewith presented and shape his pruning practices with the end in view of obtaining the advantages to be derived from a knowledge of the facts.

Attention should, at this point, be drawn to the fact that the same principles or factors governing the growth of non-bearing trees do not necessarily hold when bearing trees are considered. The most excellent pruning investigations in progress at

taken up by the roots is transported to the leaves where, with carbon dioxide from the air, the complex plant foods are elaborated. After the active vegetative period of early summer is past the plant begins to store such elaborated foods as are not needed for the promotion of diameter growth, nourishment of the fruit crop and development of fruit buds for the succeeding spring. As the season advances the cell sap, under favorable growth conditions, becomes more and more concentrated, indicating the storage of reserves for the winter months and the following year's growth. Any practice which will aid this normal development of the tree should materially benefit succeeding wood and fruit production.



Comparison of trees in background with those in foreground shows plainly how an application of miscible oil retards the buds in the spring.

Miscible Oils and Fruit-Tree Leaf Roller

By J. R. PARKER

Montana Experiment Station, Bozeman

Experiments with spray materials, when scientifically carried out by experts, are certain to add something to the sum total of existing knowledge about them. The question of virtues and efficacy of miscible oil sprays for this or that disease or pest is still one of keen debate. Every wide-awake horticulturist must be glad to learn anything he can from the experiences of others. With this in mind we print here the results obtained in combating leaf-roller on a small scale in Montana, by Professor Parker and associates. If his report provokes reply and elicits further discussion, so much the better for those studying the uses of miscible oils.

THE fruit-tree leaf roller (*Archips argyrospila*) for the past two seasons has been extremely injurious in several of the largest apple orchards in the Bitter Root Valley and during the same time has also appeared in injurious numbers in a number of localities in Washington and Oregon. The enormous damage this insect is capable of doing, the difficulty of its control and its ability to increase and spread very rapidly make it one of the most dangerous orchard pests with which the fruit growers of the Northwest have to contend. Because of the general interest with which the leaf-roller is now regarded, our experience in Montana in attempting to control this pest with miscible oils is here-with presented.

The spraying tests were conducted jointly by R. K. Thompson, manager of the University Heights Orchard Company, the Division of Horticulture of the Montana State Department of Agriculture, and the Montana Experiment Station. The general arrangement was for Mr. Thompson to furnish the trees and spraying equipment and for W. L. Shovell, now Chief of the Division of Horticulture, and Mr. Thompson to jointly supervise the actual spraying operations. The writer aided in planning the experiments and in checking up the results.

RESULTS OF SPRAYING IN 1920—The first appearance of the leaf-roller in Montana in injurious numbers was at University Heights orchard, at Darby, in 1919. During that season damage was done over a very small area, but the moths appeared in great numbers and laid eggs very heavily over an area of about 400 acres, many of the trees having from 200 to 300 egg-masses. R. K. Thompson, manager of the

orchard, realizing that the great quantity of eggs laid in 1919 meant trouble the following year, immediately took steps to find out the best known method of control.

Entomologists in several states who had had experience with the leaf-roller were consulted and all agreed that spraying with miscible oil had proved the most successful of all the control methods that had been tried. Mr. Thompson also wrote to the Montana Experiment Station for aid, but we had had no previous experience with the leaf-roller and could only hand along the recommendation of entomologists in leaf-roller states which, as Mr. Thompson already knew, was miscible oil.

Acting on these recommendations, the University Heights Orchard Company bought two car loads of miscible oil known as Spra-Mulsion. Four hundred acres were sprayed with this oil in the spring of 1920, 250 acres being sprayed early at the rate of seven gallons of oil in 100 gallons of water and 150 acres at the rate of 8 gallons of oil in 100 gallons of water.

The early spraying was done under unfavorable conditions, the weather being cold and cloudy and the spraying was interrupted by storms. The later spraying was done under ideal spraying conditions, the weather being warm and clear. The first spraying gave practically no results, while the later spraying at the stronger strength gave only 50 to 60 per cent control. As a result the trees over approximately 300 acres were almost completely defoliated, great numbers of moths matured and eggs were laid over a much larger territory than in 1919.

WINTER SPRAYING EXPERIMENTS IN 1920—The costly and negative results from the use of Spra-Emulsion in 1920, together with the enlarged area of infestation presented a very discouraging outlook for the following year. Miscible oil is a highly expensive insecticide and no one wanted to put money into it

TABLE I—RESULTS OF WINTER SPRAYING WITH MISCIBLE OILS TO CONTROL LEAF-ROLLER

Brand and Strength	Infested branches sprayed with hand sprayer in greenhouse, Nov. 20, 1920		Infested branches sprayed in orchard with power sprayer Dec. 1, 1920, and cut three weeks later	
	No. of Egg Masses	Percent of Eggs Unhatched	Percent of Eggs Unhatched	No. of Egg Masses
Dormoil, 1 to 12½.....	149	78	87.9	339
Scalecide, 1 to 15.....	111	60	48.5	309
Soluble, 1 to 12½.....	103	18	16.1	417
Unsprayed Checks.....	158	2	7.6	367

TABLE II—RESULTS OF SPRING SPRAYING WITH MISCIBLE OIL TO CONTROL LEAF-ROLLER

Brand and Time of Spraying	No of Trees Examined	Condition of Foliage
Dormoil, 1 to 11½ April 25, 1921.....	25	Twenty-four trees slightly injured—general appearance fine. One tree considerably injured, somewhat brownish in appearance.
Dormoil, 1 to 11½ April 30, 1921.....	25	Twenty-one very slightly injured—general appearance fine. Four trees slightly injured, general appearance fair.
Universal Brand, 1 to 11½ April 25, 1921.....	20	Eleven trees considerably injured—general appearance very ragged. Nine trees with nearly every leaf injured, general appearance brownish.
Universal Brand, 1 to 11½ April 30, 1921.....	25	Eleven trees slightly injured—general appearance fair. Fourteen trees considerably injured, general appearance ragged.
Scalecide, 1 to 11½ April 25, 1921.....	20	Twenty trees with every leaf injured and many reduced to stubs. General appearance ragged and brownish.
Scalecide, 1 to 15 April 25, 1921.....	20	Twenty trees with every leaf injured and many reduced to stubs. General appearance ragged and brownish.
Scalecide, 1 to 15 April 30, 1921.....	25	Five trees very slightly injured—general appearance fine. Thirteen trees slightly injured, general appearance fair. Eight trees considerably injured, general appearance ragged. Four trees with nearly every leaf injured, some reduced to stubs, general appearance very ragged and brownish.
Spra-Mulsion, 1 to 8 April 25, 1921.....	25	Twenty-five trees with every leaf injured and many reduced to stubs. General appearance very ragged and brownish.
Spra-Mulsion, 1 to 8 April 25, 1921.....	25	Twenty-five trees with every leaf injured and many reduced to stubs. General appearance very ragged and brownish.

after learning of this evident failure. After studying the composition of Spramulsion it seemed that it was not the right type of miscible oil for leaf-roller control and that possibly there might be other miscible oils that would give better results. It was decided to find out by correspondence with entomologists in states where the leaf-roller had occurred just what brands had given best results and then to try these out under Montana conditions. The result of correspondence led us to select Scalecide, manufactured by the B. G. Pratt Company; Dormoil, manufactured by the Hood River Spray Company; and Universal Brand Dormant Soluble Oil, manufactured by the General Chemical Company. Of these three, Scalecide seemed to be the most highly recommended, but was also by far the most expensive, largely because of the high freight charges from the point of manufacture in the east.

Preliminary tests of these oils were conducted during the winter months in order that we might be able to advise the fruit growers which to buy the following spring. It was realized that this was not an ideal time to conduct leaf-roller contact experiments, but it was believed that the oil which would give the best results under winter conditions would also give the best results when used in the spring and this later proved true.

The tests were conducted at the University Heights orchard on December 1. Five gallons of each oil were used, "Dormoil" and "Dormant Soluble Oil" being diluted 1 to 12½, and "Scalecide" 1 to 15. A power outfit equipped with spray guns was used. The trees were very carefully sprayed and were completely drenched. The weather at the time of spraying was quite mild with a temperature of about 50 degrees at mid-day. Three weeks after the trees were sprayed a quantity of branches heavily infested with egg-masses was cut from each tree and held in a warm greenhouse until egg-hatching on unsprayed check branches was complete.

For comparison with the outdoor spraying, infested branches from the same trees were sprayed with a hand sprayer in a warm greenhouse, where they were held until egg-hatching on unsprayed checks was completed. The same oils and the same dilutions were used as in the outdoor tests.

In both tests hatching began in 28 days after the branches were taken into the greenhouse and continued over a period of nearly three weeks. After hatching was completed on the unsprayed branches each egg-mass was examined and classed as hatched if five or more individual eggs were hatched. All counts were restricted to egg-masses deposited during the season of 1920, all old egg-masses having been previously removed. The results are shown in Table I.

It will be seen from Table I that Dormoil was the most effective in both the indoor and outdoor tests and it was, therefore, recommended to the fruit growers for the season of 1921.

SPRING SPRAYING EXPERIMENTS IN 1921—It was realized that the winter spraying tests were conducted on a very small scale and at a time when the best results perhaps could not be expected. It was, therefore, decided to conduct comparative tests of the same materials on a larger scale in the spring just before the eggs hatched. In this experiment 50 gallon lots of Dormoil, Scalecide and Universal Brand Dormant Soluble Oil and Spramulsion were used. Dormoil and Universal Brand Dormant Soluble Oil were used at the rate of 16 gallons of oil to 184 gallons of water, or 1 to 11.5. Scalecide was used at the strength recommended by the manufacturer, 1 to 15, and also at 1 to 11.5 in order to compare it directly with the others. Spramulsion was used at the rate of 22 gallons to 178 gallons of water, or 1 to 8.

Adjacent blocks of uniformly heavily infested 15-year-old trees were used for the experiment. The first spraying was

done on April 25, the weather on this date being cool and cloudy, with a temperature of 40 to 45 degrees during the greater part of the day. About an inch of snow fell during the night, but this was blown off the trees the next morning without wetting the bark to any extent.

BECAUSE of the somewhat unfavorable weather conditions which followed the first spraying, the tests were repeated on additional unsprayed trees on April 30. The weather on this date was warm and bright as was also the day following. The second day after spraying was cooler and there were light showers. Spraying day on both dates was done with power outfits, using spray guns and a pressure of 250 to 300 pounds.

The leaf-roller eggs at the time of the spraying were well incubated and by careful searching a larva could now and then be found. The leaf buds were almost breaking. The effectiveness of the various sprays was judged by a careful examination of 20 to 25 trees in each plot during the last week in May. The percentage of unhatched eggs and the number of leaf-roller larvae present on the trees were the factors upon which effectiveness was judged at this examination. Any evidence of spray injury was also noted. The results of the two sprayings are given in Table II.

During the second week in July, at which time larval feeding was practically over, the various plots were again carefully examined with the object of determining the amount of injury to the foliage which the trees had suffered as a result of the feeding of the leaf-roller larvae. All of the sprayed trees had been almost completely defoliated the previous year, thus preventing the formation of fruit buds and in judging the amount of injury we were confined entirely to the foliage. The amount of injury in the various plots is shown in Table III.

The amount of foliage injury on all the plots was less than would be expected on the basis of the percentage of the eggs that hatched and it is believed that the percentage of unhatched eggs cannot be taken as the true percentage of control. There seems to be a very high mortality among newly hatched larvae from sprayed egg-masses and it may be that many larvae within the egg-masses are almost killed by the oil, but still have life enough to eat through the egg shell and then perish shortly after they emerge.

SUMMARY OF RESULTS—Dormoil, at the strength of 1 to 11.5, gave the best results in both winter and spring spraying tests. Practically no spray injury resulted from the use of this oil at the above strength and leaf-roller injury to the foliage was so reduced that it was scarcely noticeable. A

TABLE III—SHOWING AMOUNT OF DAMAGE TO FOLIAGE BY LEAF ROLLER LARVAE ON PLOT SPRAYED WITH VARIOUS MISCIBLE OILS

	Egg Masses Counted	Percentage Unhatched	Larvae per Foot of Branch	Spray Injury
Dormoil, 1 to 11 April 25, 1921.....	1607	73.6	.5	No injury on any of 25 trees sprayed.
Dormoil, 1 to 11½ April 30, 1921.....	2357	74.5	.4	Slight injury noted on 5 out of 25 trees sprayed.
Universal Brand, 1 to 11½ April 25, 1921.....	1097	31.0	3.0	Seven slightly injured and one badly out of 20 trees sprayed.
Universal Brand, 1 to 11½ April 30, 1921.....	2162	63.4	.9	Thirteen slightly and four badly injured out of 25 trees sprayed.
Scalecide, 1 to 11½ April 25, 1921.....	1180	41.1	3.1	Fifteen badly injured and five slightly out of 20 trees sprayed.
Scalecide, 1 to 15 April 25, 1921.....	1363	25.9	3.4	Ten badly injured and five slightly out of 20 trees sprayed.
Scalecide, 1 to 15 April 30, 1921.....	2417	37.8	1.9	Two badly injured and six slightly out of 25 sprayed.
Spramulsion, 1 to 8 April 25, 1921.....	1605	16.5	5.8	No injury on any of 25 trees sprayed.
Spramulsion, 1 to 8 April 30, 1921.....	2621	33.3	3.3	No injury on any of 25 trees sprayed.

(Continued on page 21)

Soil Fertility As Related to Orcharding

By CLAYTON L. LONG

Extension Horticulturist, Oregon Agricultural College

THE most successful orchardist is the one who recognizes the several necessary fundamentals of fruit growing and is capable of classifying them in order of their importance for his own particular orchard. These essentials he groups as follows:

1. Soil management, including the maintenance of a proper soil moisture, an abundant supply of organic matter incorporated in the soil and a sufficient and properly balanced soil fertility.

2. Pruning, for the purpose of maintaining a more equal distribution of light to the entire leaf surface; a common sense distribution of the fruiting wood and for facilitating pest control.

3. Pest control, including the prevention or cure of economic injury from rodent, insect or disease pests.

4. Thinning of the fruit for the purpose of producing a more marketable at a greater profit to himself.

These four fundamentals of his business he not only considers individually, but collectively, together making up the one most profitable method of handling his

Two groups of food	Necessary Elements	Sources of Supply	Amounts needed	Factors limiting total supply
Air	Carbon	Air	95 + % of food Requirements	Amount green color leaf surface exposed to good light.
Food	Oxygen	Air or water		
	Hydrogen	Water	5 - % of food Requirements	Size of feeding and root area and amount of available soil fertility. (Nitrogen carrying organic matter being limiting factor.)
Soil	Nitrogen	Organic Matter		
Food	Phosphorous	Mineral Matter of Soil		
	Potassium	Soil		
	Calcium	Soil		
	Magnesium	Soil		
	Sulfur	Soil		
	Iron	Soil		

orchard. No one of them is decided upon or adopted before he determines the effect it will have upon the system as a whole or upon any one of the others.

Each step in his system of orchard management either tends to bring this year's crop of fruit to maturity in the most profitable condition or to maintain the vigor of the tree against its own natural tendency to become old or devitalized. He carries on his orchard practices for the continuation of a fairly vigorous wood growth as well as to bring about an annual crop of large, perfect, well colored fruit.

Soil management, the first of these four essentials, and by far the most fundamental, is the subject here treated. The management of anything, to be a real success, should be based upon a thorough knowledge of the subject to be managed. An orchard soil is no exception. While it is impossible here to make a thorough study of any particular orchard soil, it is possible to study a general one. Such a soil is a porous mass of rock and organic particles, moistened with that water retained after thorough under-drainage, ventilated by a slow circulation of air and alive with minute organisms.

There are ten elements of materials necessary for tree growth or fruit production. These are carbon, hydrogen, oxygen, nitrogen, phosphorous, potassium, calcium, magnesium, sulfur, and iron. No fruit tree can live or produce without all of these.

The first three elements, carbon, hydrogen and oxygen, usually available in unlimited quantities from air and water, make up approximately ninety-five percent of a fruit tree and its crop. The other seven, nitrogen, phosphorous, potassium, calcium, magnesium, sulfur, and iron combined supply the other five percent or thereabout. The last four, calcium, magnesium, sulfur, and iron are used by fruit trees in very limited amounts and are sufficiently supplied in common orchard soils. Where alfalfa is used as a permanent cover-crop in the orchard, sulfur may be used to advantage.

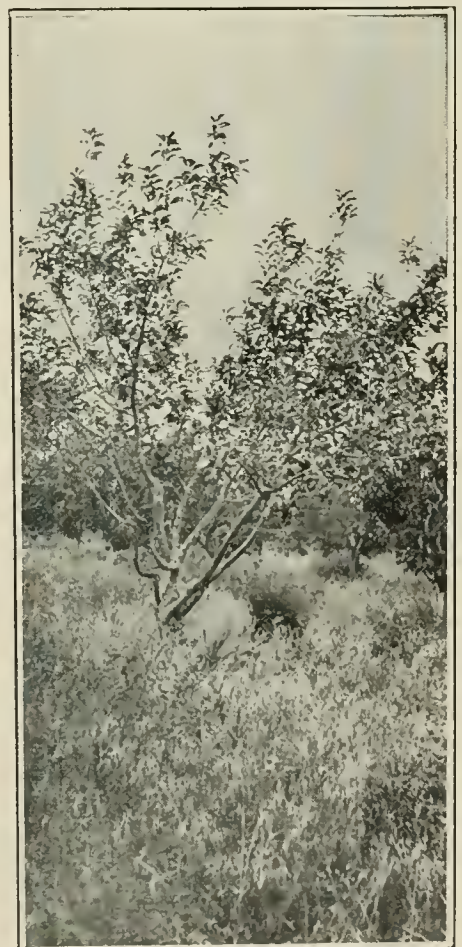
Two of the remaining three elements—

phosphorous and potassium—are used for growth and production in larger quantities and may, in the future, become limiting factors in fruit growing, but to date have been supplied in amounts great enough to meet all needs for growth and production.

THE remaining element, nitrogen, largely supplied by the organic matter of the soil, is the one to first disappear from cultivated soils. The organic matter, being the most unstable part of the soil, rapidly decays and disappears under the usual
(Continued on page 26)



Compare this apple yield, grown with alfalfa as cover crop, with that in opposite photo. These demonstration tracts are at Freewater, Oregon.



Here is typical apple tree, fruiting on a tract having grass cover crop. It is the same age as the tree shown in opposite column on this page.

Approved Culture of Red Raspberries

By G. E. DAVIS,
Sumner, Washington

THE mild climate of the Pacific Northwest makes it especially well adapted to the growing of raspberries, but not all of the land is suitable to raspberry culture.

The soil best adapted for them is a well drained sandy loam or shot clay. If the natural drainage is not sufficient to keep the water from standing on the field, then tile or box drains should be put in. Care should be taken to avoid frost pockets as good air drainage is very essential.

VARIETIES—Of the 57 varieties, the Cuthbert, Antwerp, Marlboro, King and St. Regis are the most common.

The Marlboro and Antwerp usually begin to ripen about June 15, which is ten days ahead of the Cuthbert.

The St. Regis is known as the everbearing, as it bears a light crop in the last of June and July, then bears another crop in September and on until the frost catches them. Only a few are grown and they are not profitable as a commercial berry.

The Marlboro, (or Red Cane), Antwerp and King are known as the sour raspberries. They have stout upright canes, they yield heavily and are good shippers, but are poor berries for the cannery, as they cook to pieces.

The Cuthbert has tall slim canes that droop when loaded with fruit or foliage.

The berries are sweet, of fine texture, good shippers, remain whole when cooked, and are what the canners all want. So I shall confine myself principally to the Cuthbert.

PREPARATIONS FOR PLANTING—The field should be well plowed. If there is any sod it should be thoroughly disced and harrowed, and put in fine condition for planting. Then, with a marker, lay off the field in rows, seven feet apart. It is best to run the rows north and south as it is much cooler for the pickers and the berries do not sun scald, as they do if the rows run east and west. Then furrow out the rows with an eight-inch plow or a potato hiller, going twice in a row.

Obtain plants from a one-year-old field that are free from disease and cut them back to about 12 to 15 inches long. Put two plants in a hill, 2½ feet apart. It will require 5,000 plants per acre. The planting may be done in fall or spring.

I recommend two plants to the hill because you never have enough canes the first year. Although some plants are sure to die, they will seldom both die in the same hill, therefore you will have practically a perfect stand. Some root crop, such as potatoes, cabbage or kale, may be grown between the rows the first year.

I think the furrow system is much better than planting with a spade as you are very

Specific and practical information on the planting and culture of red raspberries was given at the annual meeting of the Western Washington Horticultural Association, at Mt. Vernon, February 15-17, by Mr. Davis, who knows every phase of the subject from the grower's standpoint. The information there given is presented here. The discussion gives details so carefully the beginner might use it as his only guide in planting and caring for a new yard. It is needless to point out that, coming as it does, from an authority of wide experience in the heart of one of the country's most famous berry sections, the article sets forth the most approved practices there in vogue.

apt to plant too shallow, and as raspberries always grow up, one crown on top of the preceding year. It is much better to get them too deep than too shallow, and again, with the furrow system, you gradually work the dirt toward the plants covering the weeds and save hoeing.

POSTS AND WIRE FOR NEW FIELD—

P The posts should be 7 feet long with 8 inch face, set about 40 feet apart. The end or anchor posts, 7½ feet long, should be set at least 3 feet in the ground, the center posts 2½ feet. By setting them 40 feet apart it requires 150 posts per acre. Use No. 12 wire, putting 2 wires on the east or face of the row, one about 3 feet high to hold the young canes, the other 4½ feet to support the bearing canes. Put one wire on the west, or back, side of the row to hold the young canes. For convenience in adjusting, the wire should not be stapled to the end posts, but wrapped around the post, then, with an end about 3 feet long, twist back around wire.

It requires 140 lbs. of No. 12 wire per acre. Use two 10-penny nails on the back or west side of posts, driven at 45 degree angle, one 3 feet from the ground, the other 4½ feet. When the young canes get about 3½ feet high, raise the wire, swing it out over the canes and hook it back on the bottom nail. Then, later in the season, raise the wire to the top nail.

CULTIVATION—The ground should be stirred every week or ten days with planet jr. cultivator, spike-tooth harrow or spring-tooth cultivator, but always set the tooth that runs next to the row one half inch shallower than the others so as not to disturb the roots of the plants. It is a good plan to harrow with spike-tooth after a

rain. This keeps the ground from forming a crust and losing the moisture, as we need to conserve all the moisture possible during the summer months.

REMOVING OLD CANES—The old and all surplus canes over six to the hill may be removed as soon as the picking season is over, or may be left until the next spring when they are easily broken out, carried out and burned. I use the latter system in my yards.

WEAVING—With 5 or 6 canes to the hill, divide the hill and bring the canes over the top of wire and in behind the end post. Take the rest of the hill over the top of the wire and in behind the part of the hill you have just woven and so on, being careful not to draw the canes down on the wire too tight. Leave them up 1 or 2 inches so every bud may come out and mature.

Then, with a pair of hand clippers, cut off the ends of the canes where they lap past the next hill, usually cutting off 1 or 2 feet.

FERTILIZER—Berries require lots of fertilizer. In my yards I have been applying 10 tons of cow or sheep manure per acre, for several years. This should be put on in February. If you can not get barnyard manure, then use one-half ton or more per acre of some commercial berry fertilizer, with an analysis of 2-10-2 or higher.

PLOWING—This should be done early in the spring. Open two furrows or dead furrows in the middle of the row, as deep as you can plow with a one horse plow. Harrow this thoroughly, then plow these back and on over as close to the row as possible, plowing about 1 inch deep next to the row. Harrow immediately after. Cultivate, then keep cultivating all summer, as that is the secret of successful berry raising.

HOEING—Berries should be hoed early. Too many growers do not hoe until the weeds are a foot high thinking it cheaper to hoe only once. But it is cheaper and much better for the crop to hoe twice or even three times.

In May go through the berries with a V-shaped scraper that shoves the dirt over to the rows. Then, with a short handle garden rake or potato fork, draw the dirt up to the row. This keeps a fine dust mulch for the rest of the season.

THINNING YOUNG CANES—This should be done when they are about 2 feet high. Care should be taken to select the strongest ones. Leave about 6 or 7 to the hill, as some are apt to get broken in picking.

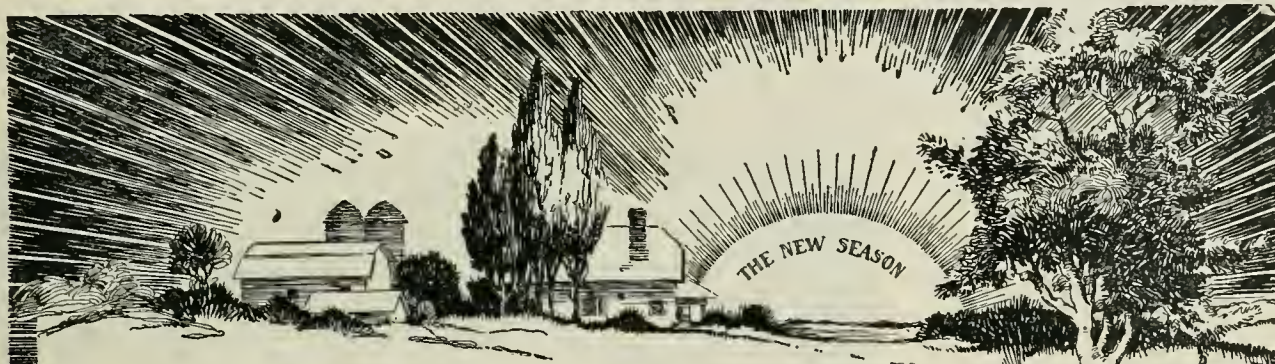
PICKING—Here is where the greatest care should be exercised. No matter how

good berries you may grow, if they are not properly picked, that is "picked clean," not crushed or broken, they will not and cannot command a good price in the fresh market or in the cannery.

Moss and lichens will not grow on trees that are regularly sprayed for the usual pests and diseases.

In pruning apples cut out all mildewed

twigs as the buds on these twigs carry infection and will prove a source of disease next year. Prune for an open tree also, as thorough spraying is difficult where the branches are thick.



Farm *for* Profit *in* 1922

THE year 1921 did not entangle itself in the heartstrings of the American farmer. It went out under a cloud and he shed no tears. Yet this cloud, like so many of the clouds in life, had its silver lining.

The agricultural ills and ailments of 1921 brought with them their own remedies. At Washington today the governmental forces, wide awake to the vital co-relation of farm and industrial welfare, are fortifying the weak places in the business of farming. The farm public has created a hundred active, vigorous movements, many of them now bearing fruit. Freight reductions, better financing and better marketing conditions, lower labor and equipment costs, legislation tending to higher farm product prices—items like these build up the optimistic outlook for the summer ahead.

For you, the individual farmer, all the factors in the situation center of course on your own acres. In so far as you are a believer in the inevitable return swing of a pendulum, you will apply your best knowledge and the most efficient and modern equipment to make your fields produce bumper crops.

As you come to the spring season you will probably discover the need of one or more new machines and we want to call your attention to the standard popular equipment that makes up the **McCormick-Deering Line**, sold by a good dealer in your community. For reliable machines and equipment, repairs, and ever-ready service, consider the **McCormick-Deering Dealer** fully qualified to serve you.

These
McCormick-Deering
Products are in Demand
at this Time of Year:

Tractors
Titan 10-20
International 8-16
International 15-30
Plows—Tractor and Horse
Disk Harrows
Spring and Peg Harrows
Culti-Packers
Drills, Seeders, and Alfalfa
Drills
Fertilizer and Lime Sowers
Corn Planters
Corn Cultivators
Beet Seeders
Listers
Engines
Cream Separators
Manure Spreader
Motor Trucks
Twine
Repairs

The
McCormick-Deering
Dealer Offers You
Standard Tractors and
the Best-known, Most-
complete Line of Tractor-
operated Equipment
on the Market.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA USA
(INCORPORATED)
92 Branch Houses and 15,000 Dealers in the United States

Control of Anthracnose, or Canker

By E. W. WHITE

District Horticulturist, Department of Agriculture, Victoria, B. C.

(Continued From Last Month)

IN 1918 the experiment was continued as in 1916 and 1917. The early spray of 3-4-40 Bordeaux was applied on September 17. The new wood had so increased that it required 90 gallons of spray mixture for the 18 trees in Plots 1 and 2, or an average of 5 gallons per tree.

Cost of the first spray was as follows:
 6 3/4 lbs. Copper Sulphate at .19.....\$1.28 1/4
 9 lbs. Lime at .02..... .18
 2 nozzle-men, 1 hour at .40..... .80
 Man and team, 1 hour at \$6.50 per day...81 1/4

Total Cost...\$3.07 1/4

Cost per tree, first spray..... 17.1 cents

September and October continued very dry, which hastened the maturity of the apples, which were all harvested on October 23. The crop was considerably lighter than in 1917, averaging about 4 boxes per tree, it being the off-year for bearing. It was so dry during September and October that when the apples were harvested there was no water available for spraying. A few days later it started to rain, and it was not until November 11 that a suitable day occurred, and despite the fact that this was Armistice Day, we made the application, because we were not calling any armistice with the canker, even though we had it beaten.

Cost of the second spray was as follows:
 12 lbs. Copper Sulphate at .19.....\$2.28
 12 lbs. Lime at .02..... .24
 2 nozzle-men, 1 hour at .40..... .80
 Man and team, 1 hour at \$6.50 per day...81 1/4

Total Cost...\$4.13 1/4

Cost per tree, second application..22.95 cents

The cost of copper sulphate was a little less in 1918 than in 1917, but labor increased in price, so the cost per tree was about the same.

ence was repeated in 1918. The apples were packed up late in December and it was unnecessary to wipe the fruit. The sprayed apples again showed remarkable superiority in keeping qualities and in freedom from rot infection in the fruit.

COUNTS OF INFECTION, 1919—On May

29, 1919, Mr. Eastham again made the counts on the trees.

Plot 1—early spray, all 9 trees were examined and only showed a total of 13 cankers, or 1 4/9 per tree; 3 trees out of the 9 showed no infection at all.

Plot 2—early and late spray, all 9 trees were examined and only showed a total of 6 cankers, or 2/3 of a canker per tree; 5 trees out of the 9 were absolutely clean.

Plot 3—late spray, all 9 trees were ex-

(Continued on page 18)



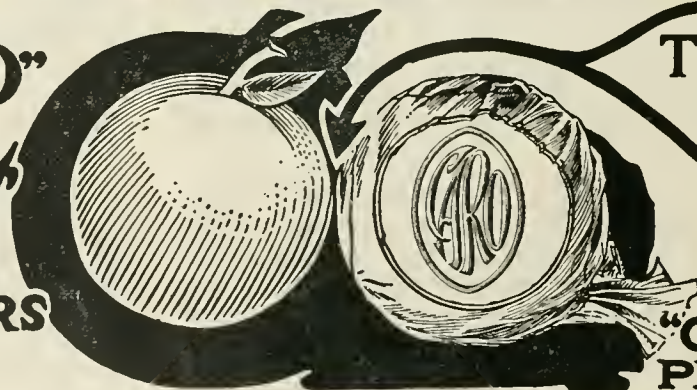
Now is the time to order your Kimball Cultivator for SPRING WORK

The Greatest Weed Eradicator Ever Made

W. A. JOHNSTON, Manufacturer, The Dalles, Oregon

STORING AND PACKING OF SPRAYED APPLES, 1918—Our previous experi-

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

Death to Peach Borers

VERY satisfactory success in treating peach trees for peach tree borer with paradichlorobenzene—call it PC benzine, for short—has been reported at the Pennsylvania State College by Professor E. H. Hodgkiss. Experiments there seemed to indicate that this substance had possibly better not be used on apple trees. It is safe, however, for plums and prunes, should these be attacked by the borers. The substance of a report on the paradichlorobenzene treatment experiments directed by Professor Hodgkiss is here given:

The peach tree borer is, in this state, a single-brooded insect. The eggs may be deposited anywhere on the leaves, limbs, or bark, to the number of 200 to 600, with an average of about 300. The larvae or "worms" hatch in ten days and crawl down the trunk and soon commence to gnaw their way into the bark, especially near the ground. The moth or mature insect is a day-flyer, resembling a wasp.

The PC benzine is a crystalline substance, which is readily volatile with fumes or gas which sinks down through the earth and find the borers beneath and kills them, if applied properly. It is not poisonous to man if not eaten or taken internally.

To apply the PC benzine, level the ground around the tree, remove the gum, and sprinkle the small crystals on the damp earth in a ring around the tree two inches from the trunk. Then throw a shovelful of earth against the trunk and let it fall back over the crystals, and follow this by mounding earth around the trunk from three to six inches high, and firm it by patting with the shovel.

The proper amount is three-fourths of an ounce on trees 6 years of age and older, and one-half ounce on trees from 3 to 6 years of age. Do not use it on trees less than 3 years of age, because of the danger of killing young trees. On trees 2 to 3 years of age tests were made to discover if short exposures could be made with safety to the trees. Examination of the older trees after a period of 14 days showed that the borers were practically all dead.

Experiments were made in regard to the distance from the trees. Some of the material was placed at a distance of two inches, and some at one inch from the trunk, with no difference in results; but the New Jersey State Experiment Station has shown that when placed at a distance of four inches or more, it is ineffective. After a period of four to six weeks it should be removed, if any is left. On damp soil it volatilizes more rapidly than on dry, and on clay soil not so rapidly as on sandy or even as on shaly or other loose soil.

The cost of treatment is $3\frac{1}{2}$ at $5\frac{1}{2}$ cents per tree, including material and labor. The date of treatment should be in northern states, September 10 to 30th, but in the South it can be as late as the middle of October. No experiments have been made

FORDSON REDUCED

TRACTORS \$230

NOW \$395 F.O.B. DETROIT

This new price is RIGHT. It is a big help in cutting the cost of fruit production.

Time payments can be arranged by your nearest Ford dealer, and a free demonstration is yours for the asking.

Fordson is the Universal Farm Utility, the "Perfect Hired Man." You can use it for plowing, harrowing, discing, culti-packing, spraying and all kinds of belt work.

Remember! The Fordson is adaptable to every farming purpose. Consult your nearest Ford dealer, or write the undersigned for booklet and free information. Please state the particular class of work you wish to have demonstrated.

Northwest Ford Dealers

Washington Montana Idaho

706 FAIRVIEW AVE., SEATTLE

<p>Musical Merchandise</p> <p>—</p> <p>Write Us</p>	<p>WE SAVE YOU MONEY!</p> <h2 style="margin: 0;">W. Martius Music House, Inc.</h2> <p>1009 First Avenue, Seattle, Washington Everything Known in Music</p>	<p>SHEET MUSIC</p> <p>—</p> <p>Write Us</p>
---	---	---

in early spring applications. It is well to try it in the spring when the soil temperature has reached 50 to 55 degrees.

The material "appears to be rather injurious to apple trees," according to tests, and it is thought that it can be used safely on plum, but the tests are insufficient to form a basis for positive statements. No injuries by the material have yet been

been observed on cherry and quince trees. Peach and other trees, 1, 2, and 3 years of age, are too young to be treated, as it injures them.

Two points are emphasized: It is safest to keep the material two inches from the trunk of the tree, and the mounds should be removed the next spring.

Gummosis of The Cherry

By C. A. TONNESON
Nurseryman, Burton, Washington

FIELD observations of the gummosis malady of the cherry trees have led to the conclusion that late fall growing, with unripened condition of cambium and sapwood, is a prevalent cause, though there may be bacterial and other factors.

In the State of Washington there are numerous valleys with a rich sandy loam soil, where the moisture is ample to keep young orchard trees growing profusely during the months of July and August. Then, with the early September rain and a mild temperature, the leaves are retained and do not cease to provide nourishment until very late, some years in December. With a sudden drop of temperature to some point below freezing, it appears, the cambium, as it is being transformed into green sapwood, is easily injured. As a result tissues are broken at one or more weak places in the bark and the exudation of the gum appears next spring.

It has been observed that, with young

orchards planted on hillside clay soils close to those in the valley, but on a drier soil where wood growth is decidedly checked during the month of August, that despite the same September rain, these hillside trees are, as a rule, too nearly ripened up for the season to make any material further growth. As compared with trees in the soils which have ample moisture for continuous and late growing, the trees which are under conditions to ripen up earlier have much less gummosis.

If this is one of the prime causes of gummosis the remedy then is to aid nature and hasten the ripening process before the winter season. Where the trees are growing on sub-irrigated soils the reduction of moisture may be beyond control, but the orchardist can reduce the sources of nourishment and, to a material extent, check contentious fall growth by pruning, which should be done from the middle to the last of August. By taking off from 15 to 25

per cent, and more where needed, of limbs and foliage the cambium-making power and new or continuous growth is reduced to

Bastian Sectional Pruners

3
P
r
u
n
e
r
s

i
n

O
n
e

6
9
12

F
o
o
t

L
e
n
g
t
h
s

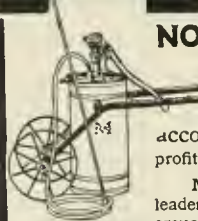
Get Price, At Once
Shipped by Parcel Post

Northwest Fence & Wire Works

Manufacturers
Portland, Oregon 52-54 Union Ave.

MYERS SPRAY PUMPS

NOZZLES AND ACCESSORIES



Spraying is the big factor in perfect fruit production. Properly carried out and intelligently followed, it accomplishes wonders and opens the way to success and big profits in the raising of fruits or vegetables for home use or for the markets.

MYERS SPRAY PUMPS, NOZZLES and SPRAYING ACCESSORIES are leaders in this field. They are designed and built for better spraying. Their numerous exclusive features, many of which are patented, insure the highest standard of spraying which produces the results desired. The tens of thousands of Myers Spray Pumps in service today is the best testimonial of their efficiency in the application of spraying mixtures.

You can easily see for yourself how remarkably complete the Myers line of Spray Pumps really is, by looking over our new Spray Pump Catalog, No. SP22. It shows all styles of Myers Bucket, Barrel and Power Spray Pumps, Hand Outfits and Power Rigs, Nozzles and Accessories for spraying, cold water painting, whitewashing and disinfecting. A postal card will bring a copy of this catalog (also contains reliable information, formulae and "How and When to Spray Instructions") to your door without the least obligation to purchase. Then if you are interested we will tell you how and where to quickly obtain a MYERS SPRAY PUMP exactly suited to your particular needs.

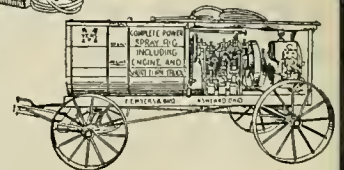
SPRAYING TIME IS NEAR — Write Immediately

MYERS POWER SPRAY RIGS ARE IDEAL FOR SPRAY RINGS, COMMUNITY AND NEIGHBORHOOD CLUBS.

THE F.E. MYERS & BRO. CO. — 135 ORANGE ST. ASHLAND, OHIO.

MANUFACTURERS OF
MYERS "HONOR-BILT" PUMPS FOR EVERY PURPOSE — HAY UNLOADING TOOL AND DOOR HANGERS

**FOR
SPRAYING
WHITE WASHING—
COLD WATER PAINTING—
AND
DISINFECTING**



Pacific Northwest
Distributors *Mitchell* Spokane, Wash.
LEWIS & STAVEN 1911 Portland, Oregon

BUY FROM THE LOCAL MITCHELL DEALER

that extent. Root pruning at this time would also help, but that is hardly practical in a large orchard, unless it is done by deep plowing at that time of the year.

About ten years ago a leading nurseryman experimented by top grafting on the Mazzard. This appeared to have reduced the difficulty to some extent. The native stock seem to be hardier than a stock of a sweet variety and naturally, for the first two years after top grafting, the flow of cambium-making material over the graft is slower than on trunks which are not top worked, hence the tendency for earlier fall cessation of growth.

After cherry trees come into bearing there is less injury from gummosis and increasingly so as the trees grow older. The nourishment derived from a vigorous growth is transformed into fruit and the

good croppers usually assume the resting stage after fruit picking time and the production of new wood during the fall is

reduced, even under the most favorable soil conditions of moisture and fertility.

(Continued on page 22)

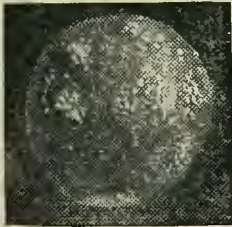


ALBATROSS BRANDS

Prevent

the "blotch" or "burn" of the spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in



Note the "blotch" or "burn" of the lead on this apple

spots or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)

The Original and Genuine Spray Spreader

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.



Directions sent with each order

Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. Bbl.	Boxes	1 lb. Pkgs.
20c lb.	22c lb.	25c lb.

Freight prepaid to Northwest points.

NOTE: If you use Casein, specify ALBATROSS Superfloc. Also call for Albatross Dry Bordeaux.

General Basic Products Co., Sole Manufacturers, 4796 E. Marginal Way, Seattle, U. S. A. Dealers: Address us for attractive sales proposition.

Top-Dressing Talks



Ammonia Makes Fruit Buds

Arcadian Sulphate of Ammonia applied about a week before blossom time (100 to 150 pounds per acre) will invigorate the fruit buds and increase the amount of fruit set.

The failure of fruit to set and the early falling of fruit often is due entirely to nitrogen starvation. In some sections an early application of quickly-available nitrogen has increased the yields of fruit from four to ten times.

ARCADIAN Sulphate of Ammonia

Arcadian Sulphate of Ammonia is guaranteed to contain 25 1/4% of ammonia (at least 1/3 more nitrogen than in any other top-dressing fertilizer). Arcadian is the only top-dressing ammoniate that is fine and dry, all soluble, quick acting and non-leaching. It is low in price per unit of actual plant food.

Order now from your fertilizer dealer and write for our free booklets, "Fertilizing the Apple Orchard," and "Fertilization of Peaches."

New York
Baltimore

The *Barrett* Company

Atlanta
Medina, O.

AGRICULTURAL DEPARTMENT

ALGEMEENE VRUCHTEN IMPORT MAATSCHAPPY

(General Fruit Import Company)

Amsterdam, Rotterdam, Cologne

head-office Amsterdam, Tel. adr. "Alvrima"

Capital Florins 3,000,000—

We solicit kindly consignments of apples.

References:

Irving National Bank, New York
Guaranty Trust Company, New York.

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York
JNO. D. ROSS.....608 Otis Bldg., Chicago

SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—C. I. Lewis, Horticulturist.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance; three years, \$2; five years, \$3. Canada and Foreign, including postage, \$2.00, payable in American Exchange

Advertising Rates on Application.

VOLUME XVI. NO 9

Apple-Tree Census

Nowadays one seldom encounters among fruit men that old bugaboo—the conviction that in a few years orchards of the country would be producing far more fruit than could find a market; that overproduction through increased acreage would ruin the industry beyond recovery.

It is not the mere fact that fortuitous circumstances have given fairly good markets for fruits of the Northwest the last few years that has laid low the old bugaboo. Not all readers know or realize it, but it is a fact that could, unmanipulated figures point toward decreased production of apples, which we have particularly in mind.

The government census shows that in 1920 there were in the United States a little more than 115,000,000 apple trees. In 1910 there had been 151,000,000 apple trees. In 10 years the decrease amounted to 23.8 per cent.

Even more vitally to the point: In 1910 there were 60,000,000 young apple trees, not yet in bearing, while in 1920 there were but

slightly more than 3,000,000 such trees.

These figures yield abundant encouragement to the man who thinks. They may rightly bring hesitation on the part of the grower who has been planning on getting out of the game.

The government's figures are not so divided as to show just where the greatest decrease in number of trees has been taking place. It certainly has not been in the box-apple states of the Northwest. It most certainly has been in old eastern states where orchardists never learned the real business of growing apples commercially, and where conditions, anyhow, doomed such attempts to failure.

Every reader can form his own deduction from these facts. How the conclusion can be anything but eminently encouraging is beyond our reasoning powers.

Value vs. Price

There is general understanding among our subscribers that BETTER FRUIT is not in that great group of journals known as "farm publications." It is a horticultural publication, of course, but, more specifically, it is to be classed as a technical magazine. As such, it has place with the highly specialized magazines of given industries, trades or professions.

Such magazines quite uniformly charge \$2 to \$4 for a year's subscription. BETTER FRUIT asks much less for subscriptions than the average of its class. It seeks to give value beyond its cost. Most subscribers so value it, as their letters constantly testify.

A further word about our subscription policy: In selling a three-year subscription at \$2 or an occasional five-year subscription at \$3, we are not, in reality, giving a cut-rate. What we are doing is merely passing on to the subscriber the savings effected. The cost of obtaining renewals, whether through solicitors or letters, is considerable. Book-keeping and mailing list expenses on yearly renewals is a further expense.

The friend who subscribes for three years at a time easily saves us the dollar we deduct from his rate. He enables us to taboo solicitors and premiums and BETTER FRUIT takes pleasure in giving him the fruits of such savings.

Nuts as Food

Figures are not at hand for the past decade, but government reports show that the use of nuts as food increased 55.7 per cent in the decade of 1900-1910. It is hardly to be doubted that the increase has been proportionate since then. In the big city stores, for instance, it is not uncommon for them to sell tons of salted peanuts in a single day.

The eating of peanuts cultivates a fondness for most other kinds of nuts. The eating of nuts is not a passing fad. It is a habit that is growing, largely because based upon sound dietetics. On the tables of thousands of American families, nuts are coming to replace meat foods to an increasing extent—as they well may do.

The point of this for our readers is the fact that the foresighted rancher will do well to plant nut trees. Demand is on the increase and assured for the future. Most of our readers are in the restricted sections where nuts thrive. Those who neglect this opportunity now, we confidently predict, will not live many years before regretting that they did not set out some nut trees.

Canned Food Week

National canned foods week is at hand, having been set for March 1-8 by the National Cannery Association. Residents of our fruit sections may not observe the period by doing much purchasing of canned goods, but may well lend encouragement through a word of commendation to the grocer who makes a special display or otherwise joins in the week's campaign.

The cannery industry is so intimately linked with the fruit industry that no grower should neglect an opportunity to give it a boost.

Marketing War

EARLY in February the Northwestern Fruit Exchange, with headquarters at Seattle, one of the largest distributors of commercial apples in the world, passed into new hands with the resignation of the men who helped form the exchange 11 years ago. The change, which is said to place the fruit exchange in the hands of the American Fruit Growers, Inc., came as a surprise to the growers of Washington.

The old directorate which resigned included, W. F. Gwin, president; Reginald H. Parsons, chairman of the board; D. H. White, treasurer; A. A. Prince, secretary; Worrall Wilson, general counsel, and John W. Langdon.

On February 20, these men incorporated at Olympia a new organization, the North American Fruit Exchange, with a capital of \$100,000. It was stated that this selling body will be a rival of the one from which the organizers resigned. The North American's officers are: Reginald H. Parsons, chairman of the board; W. F. Gwin, president; A. R. Rule, vice-president; D. H. White, secretary-treasurer; A. A. Prince, sales manager; J. Curtis Robinson, traffic manager. These officers, with Worrall Wilson, compose the directorate.

New officers placed in control of the Northwestern Fruit Exchange, at the time the old officers went out, are these: J. A. Meade, president; H. G. Fletcher, vice-president and sales manager; J. E. Mestor, secretary, and H. H. King, treasurer. Fletcher, Keith L. Bullitt, a Seattle lawyer, and Walter B. Congdon are the other board members.

A third development came February 23, at Wenatchee, when members of the Skookum Association, which has always marketed entirely through the Northwestern Fruit Exchange, voted to permit its units to market where they please. This was accompanied by organization of a third marketing body, called the United Apple Growers. The officers are: W. S. Trimble, Entiat, president; F. H. Moses, Cashmere, vice-president; F. C. Paine, Omak, secretary; Harry J. Kerr, Okanogan, treasurer.

Cover Photo

This month's cover illustration, showing the Rainier apple, is presented through courtesy of the Washington Nursery Company, Toppenish, Wash., which has exclusive propagation rights for this promising variety. The Rainier, which was originated in Yakima Valley, has been under production and tests plenty long enough to prove its worth. It has been thoroughly investigated by government and other pomologists, who have given it high commendation. Its keeping qualities and flavor are particularly lauded.

Kindly do a double favor by mentioning *Better Fruit* when you answer one of the ads.

Poison for Mice

A poison recipe that works successfully with mice in the orchard has been used during the winter by H. M. Gilbert, of the Richey & Gilbert Company at Yakima, Washington. In preparing the bait, one teaspoonful of gloss starch is put in one-half pint of cold water, the mixture stirred into a pint of hot water and boiled until a clear paste. One ounce of strychnine alkaloid, finely powdered, and one ounce of baking soda is stirred into the starch to make a creamy mass, beating it until it is clear of lumps and flakes. To this is added one-fourth pint of heavy corn syrup and one teaspoonful of saccharin, dissolved in a little warm water. The starch is again

beaten, poured over 20 quarts of rolled oats and mixed thoroughly.

Tree Stock Pests

Wood, crown, and root borers of various kinds that are very destructive to fruit trees and berry vines are often brought on the place in nursery stock. Special care must be taken in getting plants from other growers to see that fields from which they are taken are free from these pests. All nursery stock should be rigidly inspected before planting and any plants that show sunken areas, bleeding sap, or "worm-wood"—which is the frass excreted—should be discarded or returned.

ATTRACTIVE

Fruit Can Fruit Box

LABELS

Evaporated Fruit Dried Fruit

CARTONS

WINDOW DISPLAYS
POSTERS

*Our Products Help
Sell Your Products*

Write, Telephone or Telegraph for Samples, Prices and Ideas

The United States
Printing & Lithograph Co.

COLOR PRINTING HEADQUARTERS

Hoge Bldg.
Seattle

112 Market St.,
San Francisco

Control of Anthracnose

(Continued from page 12)

amined and showed a total of 130 cankers, or 14 4/9 per tree.

Plot 4—check-plot, one tree examined showed 49 cankers.

Although our work on this plot really ceased with the counts made in May 1919, it is very interesting to note that the crop in the fall of 1919 averaged slightly over 9 boxes to the tree. This increase is attributed almost entirely to the new bearing wood which had been developed in the trees in the previous three years.

SUMMARY—In summing up the results of the first three years' work the following conclusions were reached:

1. An early spray is essential.
2. A weak Bordeaux will do the work if applied early enough.
3. The cost for the early spray for the three years was only 14.19 cents per tree.
4. This is higher than it need be, because material was at war prices and was bought in small quantities.
5. Early varieties may be picked before it is necessary to spray.
6. It was found unnecessary to wipe the fruit.
7. Fruit was left sticky, but no complaints were had when it was put on the market.
8. Covering of Bordeaux did not interfere with coloring of fruit; it seemed to improve it.
9. Anthracnose rot infection on the fruit was controlled practically 100 per cent.. Keeping qualities were also improved.
10. The disease can be controlled if growers will only carry out the spraying systematically each year.

In the fall of 1919 another series of experiments was outlined, as it was desired to test the effect of an early application of 3-4-40 Bordeaux to the King apple, a variety most largely grown on Vancouver Island, and one which is ready for market about the end of September.

It was also desired to test the effectiveness of Burgundy mixture (1 lb. Bluestone, 1 1/2 lbs. washing soda, and 40 gallons water) as an early spray and also a fall application of 1 to 9 lime sulfur after the fruit was picked.

An acre of 14-year-old Kings, consisting of 45 trees, was selected in Stewart Bros. orchard, Keating, and this was divided into 5 plots of 9 trees each with one tree in each plot left as a check.

This block of Kings had been bearing very consistently up to about 12 years of age, but in the thirteenth and fourteenth years it had gone back very rapidly and when it was taken over practically every terminal growth was dead. An endeavor was made to count the infection on the one and two-year-old wood on each tree before the plots were sprayed and this count

showed an average of 88 cankers per tree over the entire 45 trees. This count was much below the real infection

The first week of September, 1919, was wet and it was not until September

12 that Plot 1 was sprayed with 3-4-40 Bordeaux and Plot 2 was sprayed with 1-1 1/2-40 Burgundy.

On November 6 Plot 3 was sprayed with 3-4-40 Bordeaux and Plot 4 was sprayed

PRICE REDUCED

“BLACKLEAF 40”

EFFECTIVE FEBRUARY 1st, 1922

See Your Dealer For Particulars

TOBACCO BY-PRODUCTS & CHEMICAL CORPORATION

Incorporated
LOUISVILLE, KY.

**WRITE
RIGHT
NOW!**

For our Book “DEHYDRATION of FOOD PRODUCTS”
—It's Free. There is a best way to dry APPLES, PRUNES, etc.

Stephenson-Schaller Co.

ENGINEERS - MANUFACTURERS
SAN FRANCISCO

We Build Best
Plants for
Dehydration of
Fruits and
Vegetables at
Low Cost

Address 312 Liberty Bank Building, San Francisco



Casein Spreader & Adhesive

Kayso in your spray means a thin film of spray solution, spread evenly over every part of tree, foliage and fruit, giving complete protection against insect pests and fungus diseases.

Kayso is sold by all leading Pacific Coast dealers. Your local dealer should be able to supply you. If not, order direct or write for descriptive circular.

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY ST. SAN FRANCISCO	277 BROADWAY NEW YORK	740 TERMINAL ST. LOS ANGELES
----------------------------------	--------------------------	---------------------------------

with 6-6-40 Bordeaux. The next day, November, 7, Plot 5 was sprayed with 1 to 9 lime-sulfur.

WHEN the fruit was harvested it was found difficult to wipe off the coating of Bordeaux from the apples of Plot 1 so that they could be harvested immediately. However, the apples from Plot 2 which was sprayed with Burgundy showed practically no deposit at all.

Early in the spring the trees were given quite a heavy pruning and an endeavor was made to cut out all dead wood. The trees all had the same treatment so that the counts of infection made later would be on a uniform basis.

On May 11 and 12, 1920, the counts were made and showed the following results:

Plot 1—sprayed with 3-3-40 Bordeaux, on the 12th, September, 1919, 3 trees showed an average of 9 cankers per tree; check tree 75.

Plot 2—sprayed with 1-1½-40 Burgundy mixture, on the 12th September, 1919, 3 trees showed an average of 33 cankers per tree; check tree 125.

Plot 3—sprayed with 3-3-40 Bordeaux, on November 6, 1919, after the fruit was picked, 3 trees showed an average of 42 cankers per tree; check tree 101.

Plot 4—sprayed with 6-6-40 Bordeaux, on November 6, 1919, after the fruit was picked, 3 trees showed an average of 32 cankers per tree; check tree 140.

Plot 5—sprayed with 1 to 9 lime-sulfur on November 7, 1919, after the fruit was picked, 3 trees showed an average of 37 cankers per tree; check tree 92.

From the results of the experiments of the past years the following recommendations for the control of apple-tree anthracnose are being made:

During July and August an endeavor should be made to go through the orchard and cut out all signs of dead wood.

On early varieties such as Yellow Transparent, Duchess, Wealthy and Gravenstein, spray with 3-4-40 Bordeaux as soon as the fruit is picked and before the fall rains come. This spray is all that is necessary.

On varieties such as King and Jonathan, it is advised to spray the last week in August with 1-1½-40 Burgundy and to follow this with a 3-4-40 Bordeaux as soon as the fruit is picked.

With late varieties such as Baldwin and Spy, which are not harvested until the end of October and not marketed until January, it is advised to spray them the last week in August with a 3-4-40 Bordeaux and this will be all that is necessary.

The use of Burgundy for varieties such as King and Jonathan is recommended, due to the fact that this spray gives very efficient results and leaves no deposit on the fruit which will be harvested probably in October.

It is felt that this disease can be almost absolutely controlled if growers will only take the matter in hand.

Nearly 700 cars of apples were shipped from the Bitter Root Valley, Montana, up to January 1.

George Brown of New Era, Oregon, last season harvested 4500 bushels of potatoes from a 32-acre tract.

GRASELLI

Place your order early for

Arsenate of Lead, Calcium Arsenate, Lime Sulphur Solution, Bordeaux Mixture.

Insure your crops with GRASELLI

This Name Has Meant Absolutely Highest Quality and Uniformity for Nearly a Century! Its reputation is built on that solid foundation—that's why GRASELLI Spray Products are known as "the always uniform and reliable." They mean sure death to the bugs and worms. And yet that substantial name and certainty costs you no more on your spray materials than some lesser name and uncertainty. Don't take a chance.

Established 1839

THE GRASELLI CHEMICAL CO., CLEVELAND

For deadly certainty

HALL'S NICOTINE SULPHATE is scientifically prepared for one purpose—to destroy plant-lice, thrips and similar soft-bodied, sucking insects.

It is guaranteed to contain 40% pure nicotine. This high concentration can be diluted with water 800 to 1000 times for a most dependable spray. The cost of such a spray is only *two cents* a gallon.

Ten-pound tins—\$13.50. Two-pound tins—\$3.50. Half-pound tins—\$1.25.

For dusting: Where dusting is preferable to spraying you will find Hall's Tobacco Dust very effective. It is finely ground and guaranteed to contain a full 1% nicotine.

Hundred-pound sacks—\$4.50 Two-pound drums—25 cents.

Buy from your dealer. If he cannot supply you order direct from us.

HALL TOBACCO CHEMICAL CO.
3949 Park Ave., St. Louis, Mo.

HALL'S

NICOTINE INSECTICIDES



Fruit Varieties for Western Washington

By J. L. STAHL

Horticulturist Western Washington Experiment Station

IN CHOOSING varieties of fruit for planting, there are several important considerations, such as object and size of the plantation, location and market, besides the personal choice of the grower.

If a few trees only are planted on a city lot or small area, dwarf types are desirable. They can be planted close, will come in bearing young, are easily pruned, sprayed and the fruit harvested. Dwarfs are too expensive planted on a large area, as it requires several times the number of trees to set an acre as are needed for standards, and the cost per tree is as great. Where a choice of location is possible, it is usually best to plant fruit trees and grapes on uplands or hillsides rather than on lowlands. Berries can be grown successfully either on uplands or on well-drained valley lands where soil and frost conditions permit.

Personal choice should govern the varieties set for home use only. Fruits and varieties recommended below for general planting, are of good quality, are adapted to most localities in western Washington, and are in demand for market. Types and varieties recommended for trial may be desirable in many localities, but as yet have not been extensively planted. Grapes are proving very profitable in some localities and should be tried at least in a small way wherever possible to do so.

Fruits particularly in demand by canners in the following list are marked "(cannery)."

APPLES	Variety	Season
	Yellow Transparent	Summer
	Gravenstein	Early Fall
	Wealthy	Early Fall
	King	Fall
	Grimes Golden	Winter
	Wagner	Winter
	Red Baldwin	Winter
	Winter Banana	Winter
	Northern Spy	Winter
	For Trial	
	Glowing Coal	Fall
	Delicious	Early Winter
	Yellow Newtown	Winter

PLUMS	Variety	Season
	Peach	Early
	Tragedy	Early
	Reine Claude de Bavay (Green Gage)	Mid-season
	Ponds Seedling (Hungarian Prune)	Mid-season
	Sugar Prune	Mid-season
	Italian Prune (cannery)	Late
	Damson Plum (cannery)	Late

PEARS	Variety	Season
	Bartlett (cannery)	Late Summer
	Louise (Bonne of Jersey)	Fall
	Hardy	Fall
	Comice	Early Winter
	Bosc	Early Winter
	Anjou	Early Winter
	Winter Nelis	Early Winter
	For Trial	
	Bordeaux	Winter
	Pres. Drouard	Winter

CHERRIES	Variety	Color
	Royal Ann (cannery)	Light
	Black Republican, sweet	Dark
	Bing, sweet	Dark
	Montmorency, sour (cannery)	Dark
	Late Duke, semi-sweet	Red

QUINCES	Variety
	Orange
	Champion

PEACHES (for trial)	Variety	Kind
	Alexander	White (clingstone)
	Amsden's June	White (clingstone)
	Crawford's Early	Yellow (freestone)

LOGANBERRIES AND PHENOMENAL BERRIES (cannery)
Color, red; fruit, large; flavor, desirable.

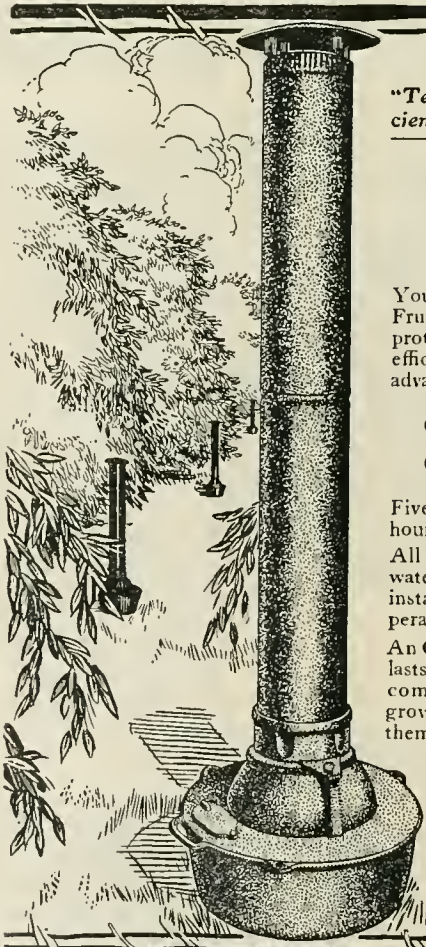
RASPBERRIES	Variety	Season and Color
	Marlboro	Early, Red
	Antwerp	Season early; Dark Red
	Cuthbert (cannery)	Red
	Cumberland	Medium, Black
	Kansas	Medium, Black

STRAWBERRIES	Variety	Season
	Gold Dollar	Early
	Marshall (cannery)	Medium
	Goodell	Late
	Wilson	Medium
	Clark's Seedling (adapted to some localities)	Medium

Bush fruits, such as raspberries, loganberries and evergreen blackberries, may be pruned at any time now without real danger of further dieback from excessive cold.

CANNOT MISS AN ISSUE
Yakima, Wash. Feb. 13, 1922
BETTER FRUIT PUB. CO.,
Portland, Ore.
Dear Sirs: Please let me know if I am in arrears. I have not missed a number yet and do not want to as BETTER FRUIT is very valuable to us as orchardists.
Yours truly, H. A. JONES

HOMEMAKERS' CONFERENCE
OREGON AGRICULTURAL COLLEGE
Corvallis, March 20-25
"BETTER HOMES FOR OREGON"
Pictured in Lecture, Exhibit, Demonstration.
The Home—Management, Sanitation, Furnishings, Labor Saving Devices and Emergencies.
The Child—Nutrition, Clothing, Books.
The Food—Selection, Preparation and Serving.
The Clothing—Selection, Making Dress Form, Decorative Touches for Garments, Short Cuts in Sewing.
Evening Entertainments
Community Play—Music—Noted Speakers
Full Information on Any Subject by Writing Registrar, O. A. C., Corvallis, Oregon.



"Tests on Oldsmar Heater show 100% Efficiency."—Prof. Peebles of Armour Institute

Frost Insurance at Minimum Cost

You insure your house, why not your crop? Fruit growers everywhere can have assured crop protection through the use of this improved and efficient heater which has a number of notable advantages over any other kind.

Oldsmar Frost Protector Costs Less To Operate

Five gallons of distillate fuel oil burns 10 to 15 hours according to temperature desired. All cast iron (stack excepted), the Oldsmar is waterproof and cannot get out of order. Lighted instantly, it requires little attention and temperature regulation is positive. An Oldsmar costs less than other cast iron heaters, lasts longer, requires fewer to the acre; affords complete protection — California and Florida grove owners and truck farmers are ordering them by thousands.

Write today for literature and full information about how the Oldsmar can protect your crop

Oldsmar Tractor Company
Oldsmar, Florida
Kell-Oil Heater Company
Coldwater, Michigan

O. V. BADLEY COMPANY
Distributors of Oldsmar Products
425 East Morrison Street Portland, Oregon

Miscible Oils and Leaf Roller

(Continued from page 8)

carload of this oil was used in leaf-roller infested orchards during the season of 1921 with very good results.

Universal Brand Dormant Soluble Oil gave fair results in the second spring spraying, but very poor results in the winter and first spring spraying. It also caused some spray injury and the injury to the foliage resulting from the work of the leaf-roller larvæ was enough to give all the trees a ragged appearance.

Scalecide gave poor results in all tests. In all the outdoor tests more than half the eggs hatched and the foliage was severely injured by the leaf-roller larvæ. Considerable spray injury also resulted from the use of this oil. It is difficult to explain the poor results secured with Scalecide when we consider that workers in other states have used it against the leaf-roller with marked success. The manufacturers suggested that the poor results in the winter spraying tests might be due to the fact that we first mixed the oil with an equal amount of water, thoroughly agitated it, and then added the remainder of the water instead of following their directions and adding the concentrated oil to the full amount of water. In the two spring sprayings the manufacturer's instructions were carried out to the letter, but with no better results.

Spra-Mulsion, even though it was used much stronger than any of the other oils, gave very poor results. Great numbers of the eggs hatched and every leaf on all the trees was injured by the larvæ, many being reduced to stubs.

Emulso

THE PERFECT OIL SPREADER

Especially perfected for spreading LIME SULPHUR Sprays.

"EMULSO" carries the lime sulphur into every crack and crevice, completely destroying all scale and leaving none to carry over to blotch the fruit.

"EMULSO" will enable you to cover approximately one-third more trees with the same amount of spray. How much spray will this save you? How much labor expense?

"EMULSO" protects the face and hands from the burning effect of lime sulphur, an item that interests every man behind the spray gun.

Field results will show the advantages of "EMULSO" with LIME SULPHUR sprays over any other type of spreader.

We have made "EMULSO" worth your while. Write us today.

MILLER PRODUCTS COMPANY
PORTLAND, OREGON



For
Lime Sulphur Sprays



For
Arsenate of Lead Sprays



Friend Sprayers

- Five Sizes
- High Pressure
- Cause less trouble
- Cost less to operate
- Give real satisfaction

Distributed in the Northwest by

Hood River Spray Co.

Hood River, Oregon

Some Reliable Northwest Nurserymen

Why Not Order Now?

TREES

For Resetting or New Orchards

Our supply will take care of your needs and you will receive stock which is well grown and reliable.

**Capital City
Nursery Company**

426 Oregon Building
Salem, Oregon

WE NEED SALESMEN

GROW GRAPES

under contract. Ask for grape circular. Special prices on grapes, berries and asparagus for commercial planting. Sweet cherries, peaches, apricots at lowest market prices. All kinds of fruit and ornamental stock. We offer strictly first class stock and guarantee satisfaction.

Home Nursery Co.

RICHLAND

WASHINGTON

Yakima and Columbia River Nursery Co.

Growers of Choice

**FRUIT TREES
SMALL FRUITS and
ORNAMENTALS**

Yakima, Washington

*"Yakima Grown" is the best
guarantee.*

FOR SALE!

Apple, Peach, Pear, Plum, Prune and Cherry trees, one year old. The best of stock. Scions are taken from selected trees.

Order Now

F. A. MASSEE

HOOD RIVER, OREGON

Fruit Trees

Ornamental Shade
Trees, Walnuts, Flowering
Shrubby, Roses,
Vines, Berries, etc.

Albany Nurseries, Inc.

ALBANY, OREGON

Canyon Home Nursery

*Everbearing Strawberry
Plants Our Specialty*

If you want true to name, strong, healthy, everbearing, strawberry plants, write us for prices.

F. I. MOFFET

Ellensburg, Wash.

Gummosis of the Cherry

(Continued from page 15)

Cherry growers in the Pacific Northwest have found that a good rule for strict adherence, is to do all necessary pruning of cherry trees, young or old from the middle to the last of August, or, with bearing trees, as soon as the fruit has been picked. At that time it is easier to determine which branches to remove for better access of sunshine and the formation of hardier fruit spurs. When the crop is off, a tree has no further need of any surplus limbs and the sooner removed the better. As for trees two to five years old, growers have discovered they can aid nature to ripen up wood growth and reduce gummosis by pruning judiciously during the latter part of August.

Montana Meeting

The twenty-fifth annual meeting of the State Horticultural Society of Montana was held at Stevensville, January 17-20, inclusive. Despite temperatures "far below zero," the sessions were well attended. There was keen interest in the diversified program. The first day was devoted principally to soil topics; the second, to small fruits; the third, to potato growing, and the final day to orcharding problems.

Dr. J. E. Porter of Stevensville, was re-elected president and State Horticulturist. W. L. Shovell was elected secretary-treasurer.

A new department has been added to enterprises of the Pe hastin, (Wash.) Fruit Growers' Association, as it will install a plant to manufacture lime-sulfur spray materials. The capacity will be 2000 barrels a year.

The Folfax Fruit Growers' Association, Placer County, Cal., has barred from membership any person not eligible for citizenship. The action is directed against Orientals.

RE-READS MANY ARTICLES

Greenacres, Wash.

Feb. 13, 1922

BETTER FRUIT PUB. Co.,
Portland, Ore.

Gentlemen: I like BETTER FRUIT fine. The articles are so well written and so instructive I lay each number away to refer back to it again and again as occasion arises.

*Yours,
D. E. MCKINARY*

Pruning Studies in California

(Continued from page 6)

is a well known physical fact that the higher the concentration of a solution the lower is its freezing point. Therefore, the higher the concentration of the cell sap the more cold the tree is able to stand both during the winter and the succeeding spring.

Whitten reports that "in Missouri one plot of peach trees which had continued rank length growth until frost in autumn, had all the flowers killed at a temperature of 27 degrees. The following night the temperature dropped to 22 degrees. An adjoining plot of trees, which ceased length growth early, but which maintained healthy mature leaves to store plant food until autumn, endured the lower temperature safely without injury to their blossoms." Similar results have been obtained on various kinds of deciduous trees in California by using what the growers have termed the "long system."

ESSENTIALS of this new system are as follows:

After five or six satisfactory placed main laterals are secured on the young tree no more heading in general seems desirable. Further pruning consists of thinning-out or cutting back to laterals in case the tree or any of its parts grow out of reach. This thinning must be carried out that the proper ration between wood and fruit production is maintained. Under most conditions the uniform production of six to eight inches of new shoot growth over the whole apple or pear tree will prove sufficient to maintain this balance.

In the same way six to eight inches on sweet cherries, eight to ten inches on plums, prunes and almonds, ten to fifteen inches on apricots, and fifteen to thirty inches on peaches may be taken as an index of a proper vegetative vigor in these respective species. A comparatively light pruning is conducive to the development of healthy fruiting wood throughout the tree which, in this case, is not shaded out by the dense rank growth of new shoots which normally follows a severe heading back.

A thinning-out methods favors to the fullest extent the maximum development of tree and fruit. Young trees thus handled are at the same age larger both in top and growth; shorter but more numerous new laterals are formed and the admission of more light to the interior of the tree stimulates the production of a continuous fruit-spur system from the lowest crotch upward; come into bearing from one to three years earlier; are more prolific, with fruit better distributed over the tree; withstand drought and frost better, and, in most instances, pruning expense is less.

Trees pruned by a heading back process are smaller, less stocky, slow in coming into bearing, do not bear maximum crops,

are probably wasteful of water and are more subject to winter-kill and frost injury.

In conclusion it may be of interest to note certain yields which have been obtained on young trees in the University orchards with no irrigation and an average annual rainfall of sixteen inches, by using the above outlined methods. Climax plum trees which were lightly pruned, bore during the third season in the orchard, approximately a crate, and during the fourth season, two crates of fruit to the tree. At the same time, the heavily pruned trees produced no fruit the third and less than a half a crate the fourth season.

Likewise, lightly pruned apricot trees

the quality, the better the price.

A few extra cents per bushel or pound amounts to several dollars on the entire crop.

Swift's Red Steer Fertilizers are made to produce bigger yields of better quality crops.

Buy from our local dealer or write us direct.



Yield and quality decide profit

Yield decides how many bushels or pounds you have to sell.

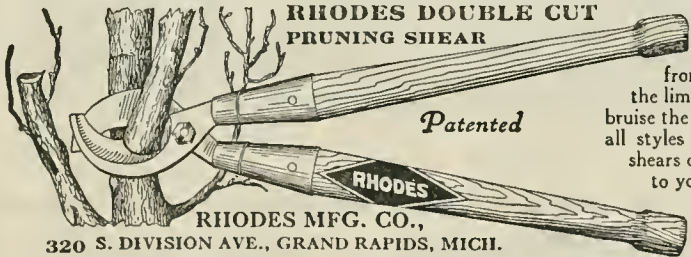
Whether the yield be large or small, it costs you about the same to grow an acre of a certain crop. The more that acre produces, the larger your profit.

Quality decides the market price of your crop—the better

Swift & Company

Fertilizer Department, No. 532

No. Portland, Oregon



RHODES DOUBLE CUT PRUNING SHEAR

Patented

RHODES MFG. CO.,
320 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.

produced twenty pounds of fruit the third, and sixty pounds the fourth season; and prunes ten to twenty pounds of green fruit the fourth season. Heavily pruned apricots and prune trees of the same age produced practically no crop.

Certain California growers have, during the past few seasons, by the so-called long system or modifications of the same, obtained most satisfactory yields, such, for example, as two tons per acre on a ten-acre orchard of two-year-old Lovell peach trees; twenty tons per acre on a twenty-acre orchard of four-year-old Tuscan Cling peaches; an average of three packed boxes per tree on a ten-acre orchard of five-year-old Bartlett pears.

English Appreciation of Our Apples

From a LONDON CORRESPONDENT

GROWERS in the Far Northwest will be interested in learning that their movements do not escape notice on this side of the Atlantic. English consumers have long appreciated the value of the fruits from the Pacific Coast, but probably never more than now, since, if it were not for the imports from the West, apples would be an expensive luxury, and, in these days of financial stringency, beyond the reach of the majority of the general public.

That leading London journal, *The Daily Telegraph*, which keeps its readers well informed on events throughout the world, including fruit growing operations, has recently focused attention upon the products of the Pacific Coast, making particular allusion to the transport facilities afforded by the new Panama route. As the writer points out, the apples, so far, have arrived in excellent condition.

Prominence is being given to the fruit at Covent Garden, particularly in the show rooms of Messrs. T. J. Poupart, Ltd. and the comments which the display has prompted will doubtless be read with interest by growers among whom BETTER FRUIT circulates. The article says:

"In no part of the world is the fruit-growing industry characterised by greater efficiency and enterprise than in the Far Northwest. Old methods are readily relinquished in order to afford play to new ideas, and this spirit of progress is now finding expression in a forward movement that has for its object a wider distribution of the fruits produced on the Pacific Coast. Allusion has occasionally been made to the possibilities of the Panama Canal in relation to the fruit industry in that part of the world. Last season, apples were forwarded to Europe by this route, and early this year, 1921, it was used by the California Fruit Growers' Exchange for the

consignment of a quantity of oranges and lemons. These departures from the trans-continental line were experimental, and the bulk of the fruit products continued to travel across the American Continent to be shipped at ports on the East Coast.

"But the experiments were attended with so much success that this season has produced a radical change of policy in regard to transport, and growers in British Columbia, California, Oregon and Washington are now exporting apples regularly through the canal for Europe."

After pointing to the additional refrigerator space that is now being provided upon steamers for the conveyance of fruit from the Pacific Coast the writer adds:

"EXTENSIVE as the fruit growing industry is in British Columbia and the western states of America, it is rapidly expanding and the prosperity of the growers depends largely upon the popularity of their products in foreign markets. Hence the regulations that govern grading and packing operations, the inspection of the fruit intended for consumption abroad, and the efficiency of the organization among the growers, which is such an important factor in promoting the export trade.

"This western enterprise is not without interest to consumers in this country. For flavor, there is no apple in the world superior to that grown in England. But at the present time, when the majority of English apples have been marketed, we depend largely for our fruit upon Canada and the United States and, owing to the bumper harvest in the Far West the bulk of our supplies come from the Pacific Coast. There is no necessity to dwell upon the importance of these consignments in relation to prices. They mean cheaper apples. But more important than price, is

Built on Integrity

WE HAVE proven that there's no more reason why nursery stock can't be grown, sold and bought with absolute confidence, than is the case with pig iron, breakfast food or clothing.

In conducting our business we assume the responsibilities that belong to the business. It's our job to produce and supply to the orchardist and planter, true to name, clean, well matured trees, delivered to him in prime condition. If we can't guarantee to do that and stand by our product year in and year out, we'll quit business.

We've been growing and delivering trees out of our big nursery at Toppenish for 19 years. Literally millions of our trees are bearing in western orchards. We hold the confidence of our customers by an exact standard of conscientious dealing, based on first class stock, the best of care and service in handling and shipping and an absolutely square deal to every customer no matter what the size of the order.

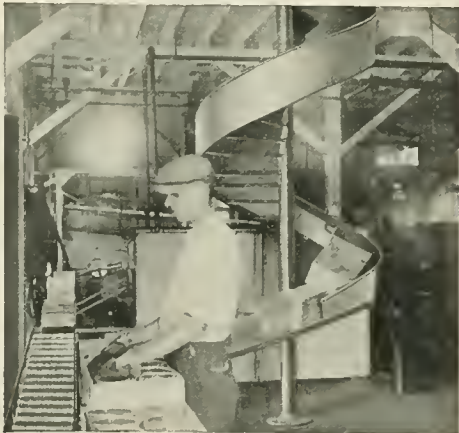
You can't buy trees of us if we don't think we can satisfy you. We consider no transaction closed otherwise.

Place your order now for Spring shipment.

WASHINGTON NURSERY CO.

TOPPENISH, WASH.

Your Tree Men Since 1903



FRYER SERVICE

SINCE 1900

STANDARD SPIRAL CHUTES

—in combination with Gravity Conveyors — handle fruit at a minimum cost.

D. E. FRYER & CO.
Dept V, Lumber Exch.
SEATTLE U. S. A.
Butte—Portland—Spokane
Tacoma

the quality of the fruit after its long sea voyage.

"This week large quantities of apples have arrived at Covent Garden from British Columbia, Oregon, and Washington—Jonathans, Newtowns, Spitzenbergs, McIntosh Reds, and other varieties—and it is not too much to say that never have apples been received in better condition. The shippers in the west are easily first as packers. Quality, size and color are carefully studied, and the attention paid to these important details explains the popularity of the fruit in foreign markets. But a feature of the consignments now being received is the freshness of the fruit, and importers attribute this not only to efficiency in refrigeration, but also to the advantages derived from the Panama Canal route."

The writer concludes by pointing out how the use of the new route will reduce the handling of the shipments to a minimum, and describes the Panama Canal as an important link between the fruit orchards of the Pacific Coast and markets in other countries.

In an interview on the subject of apple importations from the Northwest, W. Ravenhill, director of T. J. Poupart, Ltd., remarked:

"Northwestern apples have never arrived in better condition than those that have reached London by the Panama route, via Southampton. If apples can always be received here in a condition equal to that of the fruit which came on the *Molier*, then I feel convinced that the trade will show a considerable increase, because purchases may be made with confidence. And, to sell such apples, is really a pleasure."

Spreader Helps Spray

Lead arsenate spray of half the usual strength, combined with a spreader, proved much more effective than the usual strength—4 pounds to 200 gallons water—without spreader, in tests for codling moth at the Oregon Agricultural College Experiment Station. The spreader used was calcium caseinate, 12 ounces to 200 gallons of spray. The gain was due to the even, uniform coating of poison with the spreader, as against a blotchy spread without it.

Big Apple Crops

For bigger crops and better fruit spray your trees with ORTHO OIL EMULSION and Nitrate of Soda. ORTHO combines with Nitrate without breaking down. Put your spraying problems up to us.

Write for Ortho Circular

CALIFORNIA SPRAY-CHEMICAL COMPANY
WATSONVILLE, CALIF.

Address Dept. F

For your Dormant Spray

DORMOIL

Especially for Leaf Roller, Scale, Aphis, Blister Mite, Red Spider, etc.

DORMOIL has been used with remarkable success in Oregon, Washington and Montana. Write for details

HOOD RIVER SPRAY CO. Hood River, Oregon

A Hardie "Close-up"

Note the sturdy, compact and accessible construction. No complicated parts. The pump driven by flexible steel chain; a drive positive and light running. Manganese steel crankshaft; powerful and no complications. Bronze plunger rod bearings; do not cut out. Brass Plungers and Tubes; no friction, every ounce of engine power produces pressure and capacity. Threadless valve cages with flange protecting gaskets; easy to remove, no blowing out of gaskets. Pressure regulator; built in, only one valve. The one perfect regulator. Suction Settling Well; prevents all trash entering pump; prevents cutting out of valves, etc. Engine; The Ideal Power in an ample, reliable form. These mechanically sound features are the assurance of thorough spraying to every Hardie owner. Our free catalog tells the whole story.

The Hardie Mfg. Co.

55 North Front Street. Portland, Oregon

Soil Fertility in Orchardling

(Continued from page 9)

methods of management, leaving the trees with only a limited amount of this much needed element. In fact, some remarkable results in increased production as well as growth have been secured in orchards of the Northwest from the use of nitrate of soda, unaccompanied by any effort to return the burnt out organic matter. The larger chart illustrates the orchard feeding problems.

The paramount problem of the orchard men today is that of finding an economical means of returning to their soils this dissipated organic matter and then maintaining it. The moisture holding capacity of the soil, the number of minute organisms, the availability of the other soil elements, the physical handling of the soil, and the productiveness of the soil are all dependent upon this same organic matter. Indeed, it is generally conceded that the supplying of this one material, organic matter, in sufficient amounts constitutes the first and most fundamental step in rebuilding a worn out soil or maintaining a fertile one.

In order to comprehend fully the fertility problem as related to orcharding, it is well to consider the extent and sources of losses of fertility from orchard soils:

CHART II

LOSSES BY CROPS REMOVED

Fertility removed annually per acre by an apple orchard.

	Wood lbs.	Leaves lbs.	Fruit lbs.
Annual weight	3500	3500	24500
Nitrogen	11.3	35.6	16.2
Phosphoric acid	3.6	5.3	6.4
Potash	6.6	15.9	41.5

Totals; Annual weight, 31,500 lbs; nitrogen, 53.1 lbs; phosphoric acid, 15.3 lbs; potash, 64 lbs.

The above table shows that an acre of vigorous, producing apple trees removes nitrogen equal to that carried by 340 pounds of nitrate of soda; phosphoric acid equal to that carried by 95 pounds of 16 per cent super phosphate, and potash equal to that carried by 135 pounds of sulfate of potash.

LOSSES BY DRAINAGE AND LEACHING—

If the fertility removed by the trees constituted the total loss the problem would not be so difficult, but there are losses through other channels as well. Fertility existing in a soluble form is liable to be lost in drainage water or by leaching down through the subsoil, beyond the feeding roots. The amount lost in this way depends upon the amount of soluble fertility, the nature of the sub-soil and the amount of rainfall.

The heavy rainfall and the mild, open winters in the Northwest are conditions ideal for such losses, and undoubtedly contribute greatly to the deterioration of these soils.

The most serious loss from this cause is

that of nitrogen. This is the most deficient of the three key elements in our soils, especially where clean cultivation without annual cover-crops or manuring has been practiced. It is also the most expensive to supply, costing in commercial forms about twenty cents a pound.

Phosphorous lost by drainage is generally conceded to be small, as little of it exists in soluble form at any time. Potassium is lost in greater amounts, although not equaling the loss of nitrogen. The fruit soil contains large amounts of this element, but practically all of it exists in an insoluble form; hence, the loss of even a part of the soluble amount is of vital significance to the grower.

There is no investigation known to the writer which indicates the total loss of fertility in fruit growing and it is more or less hazardous to make an estimate. Taking everything into consideration, however, it will certainly be within the facts to assume that where apples are grown under clean cultivation, there is an average annual loss of 200 pounds of nitrogen, 20 pounds of phosphorous and 75 pounds of potassium, equivalent to 1275 pounds of nitrate of soda, 285 pounds of 16 percent super-phosphate and 190 pounds of high grade sulfate of potash.

COUNTERACTING LOSSES OF FERTILITY—Whenever practical it is far better to prevent the loss of fertility than to replace it after it has disappeared. A feasible and

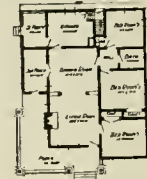
economical means of preventing a part of this annual waste is that of growing a cover-crop.

Many orchardists go to great trouble and expense in hauling manure and buying



6 Room Bungalow \$2205⁵¹

THE FENNER way of building insures better homes—superior construction—less cost. Materials for this attractive bungalow can be bought for \$2205.51. The Fenner method brings you the free services of expert architects, draftsmen and millmen. Fenner homes come to you ready to assemble. Detailed instructions make erecting easy. The result is a fine looking and well constructed home, built very inexpensively. Write for particulars.



Send 50c (to be credited on your first order) and receive a copy of the beautiful Fenner Plan Book.

Post-office Box K-4318

FENNER MFG. CO.
Foot of McKenna Avenue, Portland, Oregon



[15 Per Cent Nitrogen Immediately Available]

“the ONE fertilizer element that MUST be used!”

Whatever other fertilizers you use this year, be sure you also use Nitrate of Soda.

One of the best known horticultural experts in the Northwest (name sent on request) says, in referring to an exhaustive series of fertilizer tests:

“The only results obtained from complete fertilizers have been secured where Nitrogen was used.”

The reason for this, as shown by numerous practical tests and chemical analyses, is that the soils of this section are practically always deficient in one soil element—Nitrogen.

The use of Nitrate of Soda NOW will be apparent this fall in an increased yield and in fruit of uniformly better color and size.

For maximum returns this year use Nitrate of Soda. Cheap, clean and easy to apply.

For literature, methods of application and prices, write or wire.

NITRATE AGENCIES CO.

Hoge Building, Seattle

commercial fertilizers and neglect continuously the opportunity to grow cover-crops. An annual cover-crop of Oregon vetch, or one of the winter grains and Oregon vetch combined with the crop of leaves from the fruit trees, which is usually lost where no cover-crop is grown, will permanently maintain the supply of organic matter and nitrogen in a productive soil.

Worn out orchard soils can be brought back to life and productiveness by the same cover-crops if supplemented by a light top dressing of manure or 150 to 200 pounds of nitrate of soda applied broadcast at the time of seeding. This fertilizer will insure a rank growth of the cover-crop which could not be secured on a poor soil without some fertilizing, and soon replace the depleted organic matter of the soil, gradually decreasing the need of the fertilizer and finally doing away with them almost entirely.

Manure, straw or any other crop refuse available applied to these worn out soils will be of great help in their rejuvenation. None of these refuse materials should be permitted to go to waste within hauling


distance of any commercial orchard. Wheat and potassium and a great bulk of soil improving organic matter. straw contains much nitrogen, phosphorous

Land clearing an easy one-man job - big stumps pulled clean with this wonderful machine.

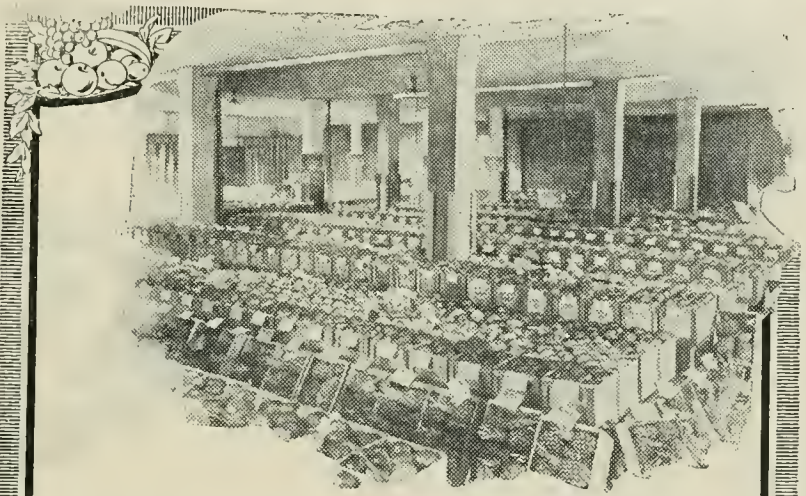
K HAND POWER
Stump Puller

The Fitzpatrick Products Corp. 99 Jolo St., New York 952 Mission St., Box 38 San Francisco, Cal.

Works on any land. Operated by hand! No horses, no digging. Made of the finest steel-guaranteed. Adopted and used by U. S. Government officials and many states. Send for FREE illustrated book on Land Clearing and special offer



ACTUAL PHOTOGRAPH



90% of All the Fruit we Sell at Auction Comes from Old Customers

Isn't that mighty strong evidence that we satisfy the people that we do business with? The fact that we have been in business over a quarter of a century is still further evidence of our reliability.

Whether you are a large or small shipper, we can assure you of better prices, quicker return of your money and fairer treatment than by other methods.

We can give you the biggest returns because selling fruit at auction cuts down sales expense and because you benefit by the best offer we are able to get from up to an average of 300 daily buyers - instead of from a few buyers as is customary at private sale.

You know positively that we return to you the full price paid for your fruits (less our small selling commission) because you can verify the prices paid by consulting such independent publications as the New York Daily Fruit Reporter. No other method turns on the light.

And you are insured against loss of your money due to bad credits as our resources are ample. It is our unvarying rule to send check for proceeds of sale within 24 hours.

For other important advantages in selling your fruits through us, write for further particulars.

The Fruit Auction Co.

Established 1896
202-208 Franklin Street, New York City

SERVICE

IS OUR FIRST N-AIM



THE
SIMPSON & DOELLER
CO.

1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES
AND PRICES

WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.

Marketing News of Interest

APPLE PRICES have been tending upward in eastern buying centers, though wintry weather at many points in mid-February stopped movements to some extent and made the markets a little quiet. Shipping agents have found much of encouragement in the market situation. In fact, most of them see no reason now, they say, why northwestern crops should not clean up in entirely satisfactory manner, at acceptable prices. They are thus cleaning up, as a matter of fact.

At the New York auction February 18, Washington and Oregon apples sold as follows:

Twenty-three hundred and ten boxes Newtowns, extra fancy, large to very large, \$3.25 @ 3.35; small to medium, \$2.90 @ 3.20; very small, \$2.25 @ 2.75; fancy large to very large, \$2.80 @ 3.05; Seven hundred and ninety boxes Spitzenbergs, extra fancy, medium to large, \$2.50 @ 3, few high as \$3.15; small to very small, \$2.20 @ 2.50. Thirty-eight hundred and twenty boxes Newtowns, extra fancy, large to very large, \$3 @ 3.35; medium, \$2.65 @ 2.80; small to very small, \$2.10 @ 2.55; combined fancy and cull, all sizes, \$2.40 @ 2.65.

Government reports on boxed apple shipments for the month of January, 1922 and 1921, carlot shipments, respectively, compare as follows: California, 126 to 106; Idaho, 130 to 238; Oregon, 467 to 260; Washington, 2,045 to 1,123; other states, 88 to 87. Total shipments this January were 2,856, compared with 1,814 in January, 1921.

Boxed apple shipments of the season, up to February 1, are reported by the government to have been 48,280. This compares with carlot shipments of 29,936 to the same date a year ago.

ON FEBRUARY THIRD, the 1300th carload of the 1921 crop of boxed apples had been dispatched from Wenatchee, leaving about 1800 cars in storage in north central Washington, according to estimates made by the Great Northern railroad, the district horticulturist and the Wenatchee Valley Traffic Association. It is expected that if the price of Winesaps advances there will probably be from 500 to 1000 cars more sent out.

According to figures compiled by shippers, the apple crop of north central Washington for 1921 will return the growers about \$16,500,000. It is confidently stated by shippers that this yield of \$500 per acre for every acre in orchard is the highest returns secured from any agricultural or horticultural land in the United States for 1921.

PRUNES are selling somewhat better in the East. Peaches and apricots are both high and scarce so neither are in serious competition with prunes. Encouraging orders have been coming to the big associations and a result has been the packing out of a number of carload shipments. Earlier predictions that the North-

west's crop will clean up quite thoroughly this spring are drawing towards fulfillment.

DURING the first week of January, 220 cars of apples, 18 cars of onions and 10 cars of potatoes were shipped from Yakima Valley. This brought apple shipments for the season up to 9,301 cars and the total of all fruit shipments to 13,585 cars.

EXPORT APPLE shipments from Portland for the 1921-22 season exceeded 400,000 boxes. One week's shipments aggregated 175,000 boxes. It is freely predicted that as the buying power returns in European countries and as shipping facilities are improved, apple exports through the Portland terminal will far exceed last season's record.

TOTAL APPLE shipments from Hood River are expected to reach 2,224,000 boxes and to return to the growers the net aggregate of about

\$3,000,000, or close to \$1.50 a box. From cull apples the growers will realize \$100,000. Returns from other crops were estimated as: Strawberries, \$90,000; pears, \$55,000; cherries, \$75,000, and from potatoes, \$45,000.



DEPT. B.



—for Cover Crops

Vetches, Field Peas, Clovers—ideal cover crops, Selected, re-cleaned seeds, carefully graded and then tested for purity and germination, DIAMOND QUALITY SEEDS assure you the greatest possible returns from your planting.

If your dealer cannot supply you
Send in your order direct



DEPENDABLE NURSERY STOCK

Fruit growers of the Northwest have learned from experience that they can rely upon the Portland Seed Co., for selected, healthy nursery stock. Write for our special Nursery Catalog. Order Now.

Don't Be Without
Our Free Seed Catalog

A splendidly reliable source of information to Western planters. It lists our complete line of Seeds, and Plants, Fertilizers, Poultry and Bee Supplies, Sprays and Sprayers, Dairy Supplies and Equipment. Write for Seed and Nursery Catalogs Today

USE OUR SERVICE DEPARTMENT

Write to us for suggestions and recommendations.



SPRAYERS For EVERY NEED

We make right here in Portland the most complete line of fine Sprayers you can find.

FINEST WORKMANSHIP BEST MATERIALS

We'll take in your Old Sprayer on a New, Efficient One.

Our high pressure power outfits are the best you can buy, and cost less.

Write Us Your Needs
Quality Sprayer Mfg. Co.
245 Grand Ave., Portland, Ore.

WASHINGTON

AT THE annual meeting of the Yakima Fruit Growers' Association, President H. O. James was re-elected and the other officers named are these: E. D. Knight, vice-president; W. B. Armstrong, secretary; L. A. Cooper, assistant-secretary; C. H. Swigart, treasurer and general manager. The association now has a membership of about 275, with 3500 acres of fruit.

OVER ADVANCES on the 1920 apple crop brought the Spokane Fruit Growers' Association into the hands of a receiver recently. The association was organized in 1914, and owned 13 warehouses in the Spokane Valley, Stevens County and Benton County. J. A. McMillan of Greenacres, the receiver, has announced that he expects to sell all holdings of the association. Assets are estimated at \$250,000, and it is said the 1200 stockholder-members will sustain little, if any, loss.

KENNEWICK seems assured of a fine new pre-cooling and storage plant, as a result of conferences recently held by officials of the Yakima Fruit Growers' Association, with which the Kennewick growers are affiliated. The plan is that local men interested assist in the financing by subscribing for 8 per cent second mortgage bonds.

OFFICERS elected to serve the Edmonds Growers' Association this year were as follows: L. E. Keeton, president; George Addy, vice-president; J. J. Robinson, secretary; A. B. Lewis, treasurer. Co-operative purchase of spray materials and seed potatoes was agreed upon.

VICE-PRESIDENT Robert H. Kipp, for 12 years manager of the Wenatchee Red Apple Company, has announced his resignation from that company and from several other organizations. He is leaving Spokane for Valley City, Ill., where he has purchased an interest in an established fruit firm, having 1200 acres in bearing orchard. His resignation follows the selling of holdings of his company in recent months.

AT THE annual meeting and banquet of the Tieton Fruit Growers' Association, J. W. Tapp was re-elected president. His report showed that last season 37 cars of pears and 296 cars of apples had been shipped from Tieton. An agreement was made that ordinary pruning workers should be paid 30 cents an hour. As other officers of the association, J. C. Havner was chosen vice-president and F. J. Straka secretary-treasurer.

THE Walla Walla Valley Fruit Growers' Association, recently organized at the state line and including growers both in Washington and Oregon, elected officers on February 1, at a meeting in Freewater. The directors are: S. A. Miller and Claude Harris, both of Milton, Oregon, A. W. Simmons, Fruitvale, Oregon, C. E. Berry, College Place, Washington, Julius Levy, E. P. Jensen and C. Schwald, all of Ferndale, Oregon.

DETER LEVANDER, Wenatchee district, thinks he holds a world's record for production of Delicious apples. From one and one-half acres his crops for the past three years have been: 2215 boxes, 1919; nearly 1700 boxes, 1920, and nearly 1800 boxes last season. Gross returns for the three years have been \$8280, \$5100 and \$4850, respectively.

DIRECTORS for 1922 were recently elected by the Washington Growers' Association, with headquarters at Vancouver. Those elected were Fred W. Brooker, Frank Russell, Henry Grass, I. L. Davies, W. H. Wood, O. C. Bell, John Spurgeon and J. H. Leverett. The latter was elected to the board as representative of the potato growers.

AT THE annual meeting of the Columbia Fruit Union, West Salmon, held early in February, these trustees were elected: John G. Myers, E. M. Peck, A. R. Haynes, A. E. Glader, W. E. Miller, N. P. Mears and C. Warnecke. A resolution was adopted ruling that only stockholders may hereafter have use of the storage space of the union.

ON HIS RETURN from headquarters of his company at Steubenville, O., John W. Langdon, general manager of the Stanton Investment Company tracts at Walla Walla, announced that his concern will market most of its fruit direct this season. The company has been marketing through the Skookum Packers' Association.

HARRY C. BENSON has resigned as manager of the Cherry Lane Orchard, near Prosser, which position he held for eight years, and will take over management of a large orchard tract in the Wenatchee district. Cherry Lane Orchard contains 240 acres of highly developed, full-bearing commercial orchard. It is largely owned by Northern Pacific Railroad officials.

FRUIT shipments from Selah in 1921 reached a total of 1,500 cars. This is an increase of 300 cars over shipments of 1920.

THE BOHLKE FRUIT COMPANY, INC., incorporated in Seattle in 1920, has sold out to the General Produce Company. The men interested in the produce company are M. M. Reese, L. E. Brown, and C. T. Moffatt. They will continue business at the old location.

OFFICERS have been named by the Grays Harbor Berry Growers' Association, as follows: J. W. Struhel, president; C. W. Musgrove,

vice-president; C. N. Evans, secretary; W. L. Leonard, treasurer; Lewis Barg, George Weygardt and Mrs. M. Berg, trustees.

Treat Your Soil with Toro Brand Agricultural Sulphur



Improves alkali soil, transforms latent potash and phosphates into available plant foods.

Prevents wire worms, eel-worms or nematodes, smutty grain, ants and potato scab. 220 lbs. per acre has increased crops up to 500%.

For dry dusting, use "ANCHOR" Brand Velvet Flowers of Sulphur.

For Lime Sulphur Solution, use DIAMOND "S" Brand Refined Flour Sulphur. Sold by leading dealers.

Write for circulars Nos. 6, 8, and 10, price-list and samples. State for what purpose sulphur is to be used.

SAN FRANCISCO SULPHUR CO. 624 California St. San Francisco, Cal.

Apples, Pears, Peaches Potatoes, Onions

and all kinds of Fruit and Produce Bought for Cash..

Address us as to what you have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.

F.C. Stettler Mfg Co.
 Portland - Oregon
 Lithographers
 Color Printers
 Labels
 Cartons
 Folding Boxes
 Cut Outs
 Display Cards
 Special Advertising
 Stiff Boxes Plain and Fancy

OREGON

ON FEBRUARY 18, the apple-canning season came to a close at the plant of the Hood River Canning Company. About 400 tons of Newtowns and Spitzenbergs were canned under a variety of labels. A goodly proportion was shipped abroad and I. R. Acheson, formerly a Hood River banker but now sales manager of the company, spent considerable time abroad looking after sales.

▲▲▲

G. M. FROST, member of the city council at Ashland and a prominent orchardist there, won first prize in a contest conducted by Stark Bros., at their nurseries at Louisiana, Mo., with an exhibit of 10 Stark Delicious apples. There were competing entries from many sections of the country and he was highly complimented on the victory. Apples exhibited by Mr. Frost won blue ribbons at the Oregon State Fair and the Medford fruit exhibit.

▲▲▲

IN ORDER that Wasco County may have fullest development of its agricultural and horticultural resources, The Dalles-Wasco County Chamber of Commerce has formed a bureau called "The Agriculture and Horticulture Bureau." It will do important work in the way of advice on plantings and analysis of soil samples. W. S. Nelson, for four years connected with Libby, McNeil & Libby, has been placed in charge. His cannery experience will prove valuable in the matter of advice to those planting new acreages and the standardization of output.

▲▲▲

FOURTEEN acres of Persian walnut trees on the ranch of A. L. Page, near Jefferson, last season produced 16,000 pounds of nuts. The trees are 29 years old and withstood the cold snap of two winters ago in fine shape, damage being confined to loss of the 1920 crop.

▲▲▲

BERRY GROWERS of Hood River communities have been discussing the question of wages for the coming season. They figure that prices will return to about the pre-war level and, for this reason, are inclined to demand a return to the wages of 1912 and 1913, when day laborers were paid 20 cents an hour.

▲▲▲

IN ORDER properly to handle berry and fruit crops of its increased membership in the Newberg district, the Oregon Growers' Association has purchased the buildings and lot formerly held by the White Sox Orchard Company at that place. There are three buildings, two built of concrete blocks, and well located on the Southern Pacific line. Acreage of association members has almost doubled in the past year and last season's shipments included 125 tons of berries, 100 tons of cherries and 230 tons of prunes, in addition to apples, pears and walnuts.

▲▲▲

A CONFERENCE of ranchers and all persons interested in nut growing was held at Pacific University, Forest Grove, on February 21. There were some excellent discussions by experienced growers, who handled phases of the growing of walnuts and filberts. The meeting was arranged by D. G. Lilly, project leader in horticulture for the Washington County Farm Bureau, Ferd Groner and County Agent O. T. McWhorter.

▲▲▲

C. R. THOMPSON, who, for the past two seasons, was manager of the Sheridan plant of the Oregon Growers' Co-operative Association, has been transferred to The Dalles plant, succeeding J. H. Frazier, manager there last season.

▲▲▲

PROCESSING of prunes at the Dallas plant of the California Packing Corporation has extended through February, with a force of 35 workers on the job most of the time. Several carloads of prunes have been prepared for shipment to eastern markets and shipments of large

size, one including 18,000 cases billed to New York, have gone forward.

▲▲▲

FOLLOWING a trip of inspection through the east, Frank J. Norton, who operates canneries at Roseburg and Drain, announced that his plants will be operated at full blast in anticipation of a strong demand for canned products this season. He expects to conduct extensive experiments with

HOTEL HOYT
Sixth and Hoyt Sts.
Absolutely fire proof. Convenient to both Depots and all car lines. Rates Reasonable, consistent with Comfort and Convenience.

Ridley, Houlding & Co.
COVENT GARDEN, LONDON

WE ARE
Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON
Codes: A. B. C. 5th Edition and Modern Economy

Notice to Subscribers!

BETTER FRUIT has adopted a policy which will eliminate in the future any "bargain offers" or premiums to subscribers.

In doing so, BETTER FRUIT has made it possible for you to receive America's premier fruit journal at the lowest possible cost, taking into consideration the fact that quality will not be lowered a whit.

We have been told many times that timely information contained in an issue of BETTER FRUIT has made a fruit grower the cost of a life subscription to the magazine—and then some.

You cannot afford to be without BETTER FRUIT if you are in the horticultural game on a large or small scale.

And by establishing a new one-price-to-all-at-all-times, BETTER FRUIT is within the means of every grower.

COUPON		THE NEW RATES:
Name		
Address		
City State		
Amt. \$ Years		
		Five years Three Dollars
		Three years Two Dollars
		One year One Dollar

the canning of broccoli, as he says there is a big demand in the east for canned broccoli. Thus far the canning of this vegetable has not brought satisfactory results.

ROSEBURG merchants are already busy agitating the question of resuming the annual berry festival, omitted last season when the city government refused to grant permits for carnival companies to have concessions at the festival. It is predicted that the merchants' association and fire department will unite this season in staging the festival and carnival.

CALIFORNIA

CALIFORNIA has discovered from figures of the National Cannery Association that its output of products for 1921 fell far below the usual average. The figures show a cannery output of less than 350,000 cases for the year. In recent years the state's pack had ranged close to 4,000,000 cases.

AS A MEANS of combating ravages of the mealy bug in southern California orchards, J. P. Coy, horticultural inspector of San Bernardino County in urging the raising of millions of cryptids, or Australian ladybugs, as they are more commonly known. These ladybugs are mortal enemies of the mealy bug, he states.

THE California Cherry Growers' Association, at its annual meeting in San Francisco, elected these officers for 1922: F. W. Maddocks, president; A. B. Haslander, vice-president; C. Long, Jr., secretary.

SEARS & NICHOLS Cannery Company, of Chillicothe, O., plans to put three new canneries in California—one in Fresno, one in the Sacramento Valley and a third in the Santa Clara Valley.

FRED C. BROSIUS has resigned his position as horticultural commissioner of Sacramento County and has accepted the position of superintendent of nursery service, Bureau of Pest Control, State Department of Agriculture.

THE SEED laboratory of the State Department of Agriculture and the government branch seed laboratory have been consolidated and established at Sacramento, where all samples of seeds that farmers or dealers may want tested are now to be sent.

THE NEW prune packing plant planned by the California Prune and Apricot Growers is to be located at Napa. Colusa is said to be also in line for such a plant.

A. H. HARRISON, for a time apple inspector for the Standardization Bureau at Watsonville, has left that service and taken a position with a new spray company at San Jose.

LIBBY, McNEIL & LIBBY have let the contract for a \$55,000 addition to their Sacramento plant.

WATSONVILLE apple growers report that they will use very little soda nitrate spray this season, having found arsenate of lead superior for control of codling moth.

AN OBSERVATION experiment with 28 kinds of prunes in one orchard is to be conducted at Napa, with a view to discovering those kinds that may most profitably be grown there.

IDAHO

A NON-PROFIT, co-operative association has been formed as the Lewiston Valley Head Lettuce Association, with headquarters at Lewiston. It is for the purpose of assembling and preparing for market the lettuce produced by its members. Standard methods will be adopted for growing and packing. The directors elected are: F. C. Finney, Walter Eddy, A. V. McConnell, J. P. Michaelson and R. W. Woodward. Returns of more than \$1000 an acre have been reported by more successful growers, for last season, and the lettuce industry is booming.

GROWERS of Sandpoint, Hope, Clark's Fork, and Morton met recently and formed tentative plans for organization of an association. If the association is formed it is expected to be of material aid in getting orchards of Bonner county into more profitable production.

FRUIT GROWERS of Post Falls have signed up 600 acres and formed an association to be known as the Panhandle Fruit Growers. These men were elected as officers: D. H. Gwinn, president; Lee Brugger, vice-president; Mrs. John Richards, secretary-treasurer.



FREE CATALOG
Sash, Doors
Millwork

Hundreds of beautiful designs direct from the manufacturer at money-saving prices. Send for your copy today.

ROVIG LUMBER CO.
2205 First Avenue So., Seattle.

You just know she bakes with it!

You wouldn't expect the thrift-wise housewife to use any other. For Ghirardelli's is the all-purpose chocolate. No fuss! No waste! Already ground, ready to use—for cakes, puddings, icings, sauces and a host of other desserts. Our new recipe booklet offers a score of reasons why you should bake with it [if you don't]. And it's free—write for it today!

D. GHIRARDELLI CO.
Since 1852 San Francisco

Say "Gear-ar-delly"



GHIRARDELLI'S
Ground Chocolate



COPPER OIL CANS
LAST A LIFE TIME
IDEAL FOR GARAGES
Circular Free

STANDARD METALWORKS
6 BEACH ST. BOSTON, MASS.

With the Poultry

WHITE DIARRHOEA

WHITE DIARRHOEA, one of the worst diseases to be encountered in raising chicks, is generally caused by infected eggs. The infection is usually contracted from the hen and is in the egg when it is laid. In rarer instances the germs may be only on the shell or about the nests. Moldy straw, chaff or grain is frequently responsible for the infection.

The obvious deduction is that trouble from this source should be avoided through prevention. Care should be taken that the flocks of the hatching pens or from which hatching eggs are obtained, be kept in prime condition. Likewise, if hens are used for hatching, care should be taken to see that they are clean and healthy.

Never pack the eggs intended for hatching purposes in any substance or place where there is mold or where it may develop. Keep the eggs in a dry, moderately cool place. They should be so spread out that the air may circulate around them.

If the diarrhoea appears after the chicks are hatched there is but little to be done in the way of treatment. Chicks that show symptoms or evidence of the disease should at once be removed from the brood. You may try methods of treatment for the sick chick, but this is seldom worth much trouble. It is more important to clean up the source of infection as fully as possible.

White diarrhoea may develop in chicks from one day to four weeks old. About the first symptom is an inclination to droop and huddle up in the brood and under cover. The chick usually sits long in one position, probably with eyes closed and refuses to eat. The wings droop and the plumage loses its lustre. Close watch of the brood for these symptoms will pay, as they appear before the diarrhoea actually shows up.

HATCHING WEAKLINGS

MOST POULTRY raisers know it, yet the importance of the advice not to hatch from the eggs of pullets less than eight or nine months old is such that it may well bear repetition and reiteration. Eggs from yearling hens may be used with fair results but to hatch from eggs of younger layers courts trouble. While the eggs hatch well enough, the chicks from such eggs lack vitality and are susceptible to the diseases that beset weak chicks. For breeding purposes two-year old hens are best, as chicks from their eggs are more vigorous and hardy.

LAYING CONTEST RATION

FOLLOWING is the ration given the hens at the Sonoma county Farm Bureau laying contest at Petaluma, California. Scratch feed—180 lbs. barley, 180 lbs. milo, 180 lbs. cracked corn. Mash—160 lbs. bran, 90 lbs. middlings, 130 lbs. ground corn, 60 lbs. ground barley, 50 lbs. meat scrap, 50 lbs. fish meal, 15 lbs. charcoal, 3 lbs. salt.

Scratch feed is fed in litter one-third early in the morning and two-thirds early in the afternoon. Mash is fed dry in hoppers and is before the birds at all times. Greens are fed both morning and afternoon in hoppers.

SIZE, SHAPE and color of eggs are breeding problems just as much as the number of eggs produced by an individual is a breeding problem. All eggs incubated should be uniformly large and of a color characteristic of the breed. Each egg incubated should weigh at least two ounces. More uniformity in selecting eggs for hatching means a more uniform flock and product.

GREEN FEED is necessary for hens if they are to be kept in the best breeding condition this time of the year. Finely chopped green rye or

oats will serve the purpose well. Green feed is of great importance in producing fertile, hatchable eggs.

CLEAN, DARK nests should be provided for the hens. Even aside from the matter of sanitary benefits, proper nests will mean a minimum of cracked and dirty eggs.

AVOID extremes in feeding. Over-fat hens produce undesirable hatching eggs and offspring about equally as much as those seriously underfed.

FREE RANGE is an important factor in having a healthy flock, but if it is out of the question be sure the birds are made to take enough compensating exercise.

REGULATION marketing cases make an excellent receptacle in which to store eggs intended for hatching.

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

COLUMBIA NURSERY COMPANY

1490 Union Ave., No. Portland, Ore.

Arrow Carbolineum

(Formerly Avenarius Carbolineum)

Protects poultry against vermin—Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING COMPANY

222 E. Water St. Portland, Oregon

Many Men Are
Making Extra Money
--So Can You--

Better Fruit has an unusual offer to make you for part of your time, if your territory is not already taken. A postal card will bring you full particulars.

BETTER FRUIT PUBLISHING COMPANY
TWELFTH AND JEFFERSON STREETS PORTLAND, OREGON

An Honest Incubator AT an Honest Price

Hot Water, Copper Tank, Self Regulation, Large Oil Tank, Safety Burner, THREE Washed, Western Red Cedar Construction. From \$9 to \$30 Egg Capacity 60 days FREE TRIAL. Electric and Oil Heated

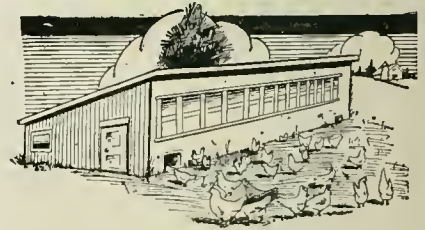
Brooders Get our catalogue and free poultry help
St. Helens Incubator Co. Centralia, Washington



Virginia Games

Fancy Black Breasted, Fancy Black Breasted, red, exhibition, games, gamey fighters. Limited supply of stock and eggs yet for sale.

GREEN VIEW POULTRY FARM
Waynesboro, Va.



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80¢
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Bee Poisoning

By A. E. BURDICK

THE APIARY and the orchard—what a logical combination. When man was first made the Creator took some clay and breathed into it the breath of life and it became a living being. Then, among other creatures he made bees.

Now bees rob the flower stamens of their pollen, carrying away the load in little pockets on their legs, provided for that purpose. They reach down into the nectaries at the base of the corolla and drink up the aroma laden nectar. Fecundation is apparently no concern of theirs. They are poaching and, when laden with their golden treasure, wing their way to their hive—their home, the place that pulls the heartstrings of all animate creation.

Bees and the orchard—a fine and logical combination. But, come with me for a few moments to the home of a beekeeper, Mr. S., who lives midway between Grandview and Prosser, Wash.

In the season of 1919-20 Mr. S. had about 100 colonies of bees. The summer of 1920 saw them reduced to 20 colonies through spray poisoning. These wintered well and the spring of 1921 found him with 20 strong colonies, ready for the swarming in April.

Late in July he wrote me that his bees were being poisoned and that he hoped to be able to sell his small ranch, bees and everything, and move away, stating that both Mrs. S. and he were in poor health. In this letter he expressed the hope that I would come over and see them and this I did a few days later.

His bee-yard presented a gruesome sight. All the new swarms cast in April were dead. Starting without a store of honey and brood reserves they had quickly succumbed. Their empty hives stood there as grave markers only.

About 17 colonies of the old stock still showed evidence of life. Figuratively speaking, however, it was necessary to use a stethoscope and mirror to establish the fact. No guards were at the entrances and an occasional bee would enter unchallenged. Where was his great army of peaceful workers? They were everywhere in that neighborhood. With every step you crushed their dead bodies.

The scene reminded me of a despoiled and defeated army, without sufficient reserves to bury their dead, and what an unequal and despicable conflict! Their death was a travesty on justice. It was preventable and without justification.

The remedy is simple. It should be unlawful to spray an orchard with arsenate of lead while the orchard is in bloom, or while a cover crop beneath the trees is in bloom.

But let me focus again for a moment, on Mr. S. with your indulgence. He and Mrs. S. had planned to live out their allotted time in the little home there among the bees. He had been a suc-

cessful beekeeper, a generous hearted neighbor and friend. But what a hardship they had encountered! Is it any wonder they talked of not being well and wishing to sell?

Yes, they can move on, driven from their Arcadia by greed and disregard for their fundamental rights. But already the frosts of more than 70 winters have thinned and whitened the hair of his head, and not far distant stands Charon and his boat.

Our Inquiry Department

I HAVE HEARD a great deal about the sex of strawberry plants and know there are those that fertilize themselves and those that do not. What I particularly want to know now, is how to tell the sex of strawberry plants. I will appreciate an answer and you need only give it in your inquiries column if you prefer. J. R. L., Idaho.

Practically the only way to tell the sex of strawberries is when they are in bloom. Look into the petals and observe the little threads within the circle of the white petals. If you find them all green in color and carrying no yellow knobs—flower dust or pollen—then you may know the plant is female only, or pistillate as the "plantologist" calls it. If the little threads all have yellow knobs on the tops, then the plant is male, or staminate.

As you evidently already know, there must be both kinds in the strawberry patch or you can get no berries. The staminate plants must fertilize the pistillate in order to set any fruit. More properly, it is generally the case that the flower has both stamens and pistils—threads with and without the pollen knobs—and thus pollinizes itself.

▲ ▲ ▲

CAN you give me any information regarding best methods for destroying the "borer" in prune trees?—G. T. H., Oregon.

You will find the subject handled in this issue, where the use of paradichlorobenzene in killing borers is discussed. Experts seem well agreed that this poison is decidedly the most effective method yet developed for curbing the borer pest.

A FIVE-CAR order of extra fancy Winesaps was filled by the Wapato Fruit and Cold Storage Company for a Boston broker, who shipped them to reach London Christmas trade. Apple shipments were made to Norway and Scotland from Wapato, during the fall.

A government bulletin dealing with the codling moth is in course of preparation by E. J. Newcomer and W. D. Whitcomb, who have made a three-year study of the pest in Yakima Valley. These men are entomologists of the Department of Agriculture.

BEEES FOR POLLENIZATION

Italian bees in modern hives with high grade queens. Now is the time to invest in pollinizers to insure a high percentage of fertilization. For particulars, write

J. C. ELMORE

21-23rd Street, Corvallis, Oregon

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape, Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.

Toppenish, Washington.

Salesmen everywhere. More wanted.

BEEES

The Diamond Match Company

APIARY DEPARTMENT

Manufacturers of Bee Keepers'

Supplies

Chico, California, U. S. A.

(The largest bee hive factory in the world)

Write for catalog and discount sheet; and, if a beginner, for Cottage Bee-Keeping, also for particulars of the MacDonald Aluminum Combs.

RELIABLE NURSERY PRODUCTS

Large assortment of the best varieties in Fruit and Nut Trees, Small Fruits, Shade and Ornamental Trees, Shrubbery, Roses, Vines, Perennial Plants and Bulbs. Fully equipped Landscape Department. Planting plans furnished for residence grounds, large estates, Parks, Cemeteries, etc., also Tree Surgery done. All stock and work the best. Write today stating your needs.

OREGON NURSERY COMPANY, Orengo, Ore.

Opportunities for More Salesmen



SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

CORY THORNLESS BLACKBERRY—Best of all; extra large, vigorous plants ready; satisfaction guaranteed; illustrated price list. Write Chas. E. Mortenson, Lodi, California.

CORY THORNLESS BLACKBERRY—Large, delicious. You get well rooted plants true to name from Pioneer grower. Wm. Mortenson, Rt. 1, Lodi, California.

INSPECTED STRAWBERRY PLANTS—Improved New Oregon, Eitersburg 121; large, vigorous and healthy; \$5.00 per 100, F. O. B.; \$1.00 per 100, postpaid. Christian Arnesen, Canby, Oregon.

CUTHBERT RED RASPBERRY PLANTS—\$1.25 per 100, or \$8.00 per 1000, F. O. B. Alvadore, Oregon. E. P. Saunders, Alvadore, Oregon.

FILBERT TREES of approved varieties. Please state when writing how many you want. Dr. J. H. Wilkens, McMinnville, Oregon.

LOGANBERRY PLANTS—50,000 choice plants; unusual low price. Harry Lanum, R. 4, Salem, Oregon.

BEEES

BEEES AND QUEENS—Keep bees to pollinize your fruit. Get more and better fruit. Make a profit off the fruit and bees too. Write for circulars. Nueces County Apiaries, Calallen, Texas.

"SUPERIOR" Foundation (Weed Process) and "Everything in Bee Supplies." Superior Honey Company, Ogden, Utah.

JOHNSON'S PACKAGE BEEES and vigorous Italian queens. Safe arrival and satisfaction guaranteed. Write for reduced prices. George T. Johnson, 165 Raymond Avenue, San Jose, California.

80 COLONIES BEEES in Ten Frame Hives, combs on wired foundation; no disease. Price \$12.00 per colony. W. H. Dancer, Myrtle Point, Oregon.

POULTRY

BABY CHICKS—The kind that grow into healthy, vigorous, egg-producing hens. R. I. Reds, Banded Rocks and White Leghorns. Order now before our dates are all filled. Prices: R. I. Reds and Banded Rocks, \$25 per hundred; White Leghorns, \$20 per hundred. Write for prices on larger numbers. Portland Seed Company, 180 Front Street, Portland, Oregon.

BABY CHICKS—S. C. Rhode Island Reds, \$22.50 per 100; S. C. White Leghorns, \$18 per 100; all sold to April 6. Order now from old and established breeders who have made good on the merits of their stock. Maple Brook Poultry Farm, Southworth, Wash., Box 3.

WHITE LEGHORN Baby Chicks from egg machines, Corvallis bred. The place that produces world-record makers. Vigorous, heavy-laying, free range stock. Pre-war prices. Oregon Corvallis Hatchery, Corvallis, Oregon.

BABY CHICKS—Reduced prices on White Leghorns, Reds, Banded Rocks, White Rocks, Minorcas and Anconas. Booking orders now. Postal secure Free catalog. Write today. C. N. Needham, Salem, Oregon.

WHITE WANDOTTES—Egg Bred Males. Size and quality backed by high official records. A. Gronewald, The Dalles, Oregon.

WINNERS—R. I. Reds (both combs), Toulouse Geese, Bronze Turkeys; Yack and eggs for sale. J. Nonnemacher, Rt. 3, Yakima, Wash.

CHOICE Mammoth Bronze Turkey Toms, \$10. Mrs. Amelia Reimers, Eagle, Idaho.

HEAVY LAYING STRAIN—S. C. Brown, S. C. White Leghorn hatching eggs, at fair prices. Deer Creek Stock Farm; Kerr Bros. Props., Sheridan, Oregon.

CHICKS from Acme Poultry Farm—Cottage Grove, Oregon; 100, \$15.00; pen averaging 228 eggs, 100, \$20.00; Lot and monthly reductions. White Leghorns. Safe delivery, guaranteed.

REAL ESTATE

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John J. Black, 197th street, Chippewa Falls, Wisconsin.

FORTY-THREE ACRES—Upper Hood River Valley, on new Loop Road around Mt. Hood; 15 acres commercial orchard, 10 years old, just coming into full bearing; 2 acres strawberries; 3 acres alfalfa; 4 acres under plow; fine potato land. Two good houses; two barns, one used for packing house; good stream, some free water; every acre under irrigation ditch; two miles from town; depot, stores, grade and high schools, church and library. One of choicest locations in upper valley. Fine view of Mt. Hood and Mt. Adams. Price \$15,000, \$6,000 cash. M. I. C., care Better Fruit.

BARGAIN—Fine 13-acre apple orchard, planted to Delicious, Grimes Golden and Jonathans; eleven years old; running water; well located; this would make an ideal fruit and poultry ranch. On good county road one mile from good educational town. For further particulars and price write Box G, Philomath, Benton County, Oregon.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables, hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Wash.

FOR SALE—62-acre farm, 48 miles south of Portland; running water; horses, cattle, machinery and furniture. A. H. Koppang, Silverton, Ore.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FOR SALE—Apple orchard, commencing to bear; finest box varieties; highest quality attained. Bolling Hall, Waynesville, N. C.

FOR SALE—Fine income orchard and alfalfa, near Lyle, Washington. Last crop sales about \$2300. Price \$5500, plus any expense paid against this year's crop, \$3000 cash. This is good and a splendid bargain. Get details. D. C. Roseboro, 368-12th Street, Oakland, California.

THE A. L. JOHNSON CO., of Turlock, California, are prepared to offer many fine locations of California ranch and residence properties to interested parties at reasonable prices. For information write box 363, Turlock, California.

MISCELLANEOUS

TRACTOR BARGAINS—Cletrac "W," only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Badley, 425 E. Morrison, St., Portland, Oregon.

WANTED—To examine your orchard for you before you buy. I saved one man \$5000 on a \$14,000 deal. To look after orchards of non-resident owners. Many are poorly cared for and rapidly depreciating in value. Private pruning demonstrations and consultations given. Luke Powell, consulting horticulturist, Yakima, Wn.

ALFALFA SEED, CLOVER SEED, SEED corn—We are located in the heart of the largest and best alfalfa and clover seed district in the west and can give you both quality and price. Get our samples and quotations before buying. Our seed corn is of the finest acclimated strains. Garden and flower seeds of all kinds. Send for our catalog. Darrow Bros. Seed & Supply Co., Twin Falls, Idaho.

FOR SALE OR EXCHANGE—20 H. P. type N, Fairbanks Morse gas engine, direct gear driven with clutch to 10-inch brass-lined plunger pump all on one base; first class condition. Will sell engine separately, cheap, if taken at once. Also 25 H. P. 2-cylinder, Westman kerosene engine, direct connected by silent chain drive, to an American Pump 4-inch discharge, constructed for 65-foot head, rated at 480 gallons per minute. Ben L. Enos, Brewster, Wash.

KENTUCKY LEAF TOBACCO—3 years old, nature cured. Don't send a penny; pay for tobacco and postage on arrival. Extra fine quality chewing or smoking, 10 lbs., \$3.00; medium quality smoking, 10 lbs., \$1.25. Farmers' Union, D-65, Hawesville, Ky.

TOBACCO—Kentucky natural leaf chewing and smoking; rich, ripe, mellow; two years old; aged in wood; 10 lbs., \$3; 20 lbs., \$5; sample, 20c. Maddox Bros., Dept. 22, Mayfield, Ky.

HOMESPUN TOBACCO—Chewing, 10 pounds, \$2.50; 20 pounds, \$4; smoking, 10 pounds, \$2; 20 pounds, \$3.50. Farmers' Union, Mayfield, Ky.

FOR SALE—Hubam annual sweet clover; scarified seed; genuine Hughes strain; Free Sample. Jas. H. Kitchen, Rt. 5, Springfield, Ohio.

PEDIGREED White Scotch Collie Pups. Write for descriptive price list. Mrs. E. A. Bennet, Salem, Oregon.

TRY OUR INTRODUCTIONS—Wonderful new hybrid alfalfa. Write J. L. Lawson, reliable tree and seedman, San Jose, California.

HUBAM Annual White Sweet Clover Seed; inspected by county agent. Albert Day, Newtown, Ohio.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO. 427 Oregon Building Salem, Oregon

POSITIONS

BECOME government railway mail clerks—\$133-\$192 month; steady; men-boys, over 17; list government positions free. Write today sure. Franklin Institute, Dept. B 106, Rochester, N. Y.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street
SALEM, OREGON

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.
Catalog mailed on request.

Gebhardt, Scudder & Hendrickson

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The ARCADY Company Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 12 1/2 Jefferson St. • Portland, Oregon

Also PRINTING
MULTIGRAPHING
ADDRESSING
MAILING
MAILING LISTS

MAIN
8829

THIS PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT

THE WORLD—OUR ORCHARD

PLAYING THE GAME

NEVER in the history of the fruit trade has any concern made heavier losses than we did last season in the apple deal. This is a matter well known to all the fruit trade of the United States. It is, therefore, more than gratifying to us to announce the continuance of our policy of doing business on the same basis, regardless of whether we win or lose.

We do not wish to appear egotistical, nor do we wish to put ourselves on a pedestal of superiority over our friends and competitors. However, we can look back upon our business experience of last year with pride. The policy of this firm is known throughout the world—wherever a single package of fruit or produce is handled—in a commercial way.

The code of ethics employed by this firm is based upon the American ideal of the square deal.

When Moses received the ten commandments and brought them from the mountain to the chosen people, the fruit trade was not taken into consideration. If it had been, we are quite sure that there would have been woven in much pertaining to the fruit business, and written thus, to the everlasting honor and glory of a great and grand industry.

1. Thou shalt play the game straight, irrespective of consequences.
2. Thou shalt pay all drafts, regardless of market conditions upon arrival of cars.
3. Thou shalt back thy judgment with thine own coin.
4. Thou shalt not turn down any cars, unless thy shipper is actually trying to defraud thee.
5. Thou shalt consider a contract a contract and which is made not to be broken, no matter what the cause.
6. Thou shalt consider thy firm's good name thy biggest asset.
7. Thou shalt consider it a privilege to lose, from time to time, for as long as thou canst take a loss without a kick, thou art a good sport and deserveth success.
8. Thou shalt keep one set of books, so when thy shipper calls on thee and desires to examine thy accounts, thou canst look him straight in the face and tell him to go as far as he likes.
9. Thou shalt never overquote the market, thereby giving false witness against thy neighbor, who has troubles enough of his own and which may induce the husbandman to ship goods to thee which he could have sold at higher prices elsewhere.
10. Thou shalt not covet thy neighbor's business, for there is enough for everybody and then some.
11. Thou shalt particularly take care of the goods sent to thee on consignment by thy fellow man, who may be thousands of miles away from thy business abode, but who depends upon thy honor and wisdom to see that he receives proper compensation for the harvest made by the sweat of his brow.

By playing the game according to these commandments, thou wilt live long in the land and wilt earn a heritage of which thy sons will be proud when thou art laid to rest among thy fathers for, after all, a good name is greater than worldly riches.

Steinhardt & Kelly

273-277 Washington Street

Cordoba 2260 Buenos Aires
ARGENTINE

NEW YORK

102-106 Warren Street

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.



For Every Farm Help

The New Model F
Cletrac
Reg. U.S. Pat. Off.
**TANK-TYPE
TRACTOR**

\$795

Complete F. O. B. Factory

No matter how many tractors, or how many types of tractors, you have seen—you'll find the new Cletrac (Model F) astonishingly new and different. So simple in design, so easy to operate and maintain—it has such a decidedly all-year usefulness not ordinarily looked for in a tractor that it will actually cause you to figure tractors all over again.

The new Model F Cletrac is a real all-round tractor. It plows, discs, harrows, seeds, cultivates, harvests and does all kinds of belt work. And consider that it is only 31 inches wide, 50 inches high, 83 inches long and weighs only 1820 pounds.

Its capacity for work is enormous—plows 6 to 8 acres a day—discs 15 to 20—harrows 20 to 25—and withal it is so simple, care-free and accessible.

A few minutes of practice and you have mastered its operation. Every part is easily accessible. An automatic oiling system makes oil and grease cups unnecessary. Chrome steel—the toughest material obtainable—is used for all parts subject to wear, and it is equipped with a sturdy, powerful 4-cylinder kerosene, distillate or gasoline burning motor.

The new Model F Cletrac is without equal for day in and day out, all-job usefulness and dependability. For utility, quality and price it is an unprecedented value.

See your local Cletrac dealer or write our nearest office for full information.

THE CLEVELAND TRACTOR CO.
"Largest Producers of Tank-Type Tractors in the World"
19145 Euclid Ave., Cleveland

Pacific Coast Factory Branches
Los Angeles, Cal. San Francisco, Cal. Spokane, Wash.



Hard this way,
but—



Easy on a track
The Cletrac Way

1. Handles every farm job.
2. Plows 6 to 8 acres a day using any 2-bottom 12-inch plow.
3. Every part subject to wear constructed of chrome steel—weighs only 1820 lbs.
4. Automatically lubricated—no grease or oil cups.
5. Simple, care-free design—burns kerosene, distillate or gasoline.
6. Every working part quickly accessible.
7. Unprecedented value at \$795 complete.

Model "F" Cletrac is made in four sizes: 31 inches wide, with 8 inch clearance; 41 inches wide, with either 8, 14, or 18 inch clearance.

BETTER FRUIT

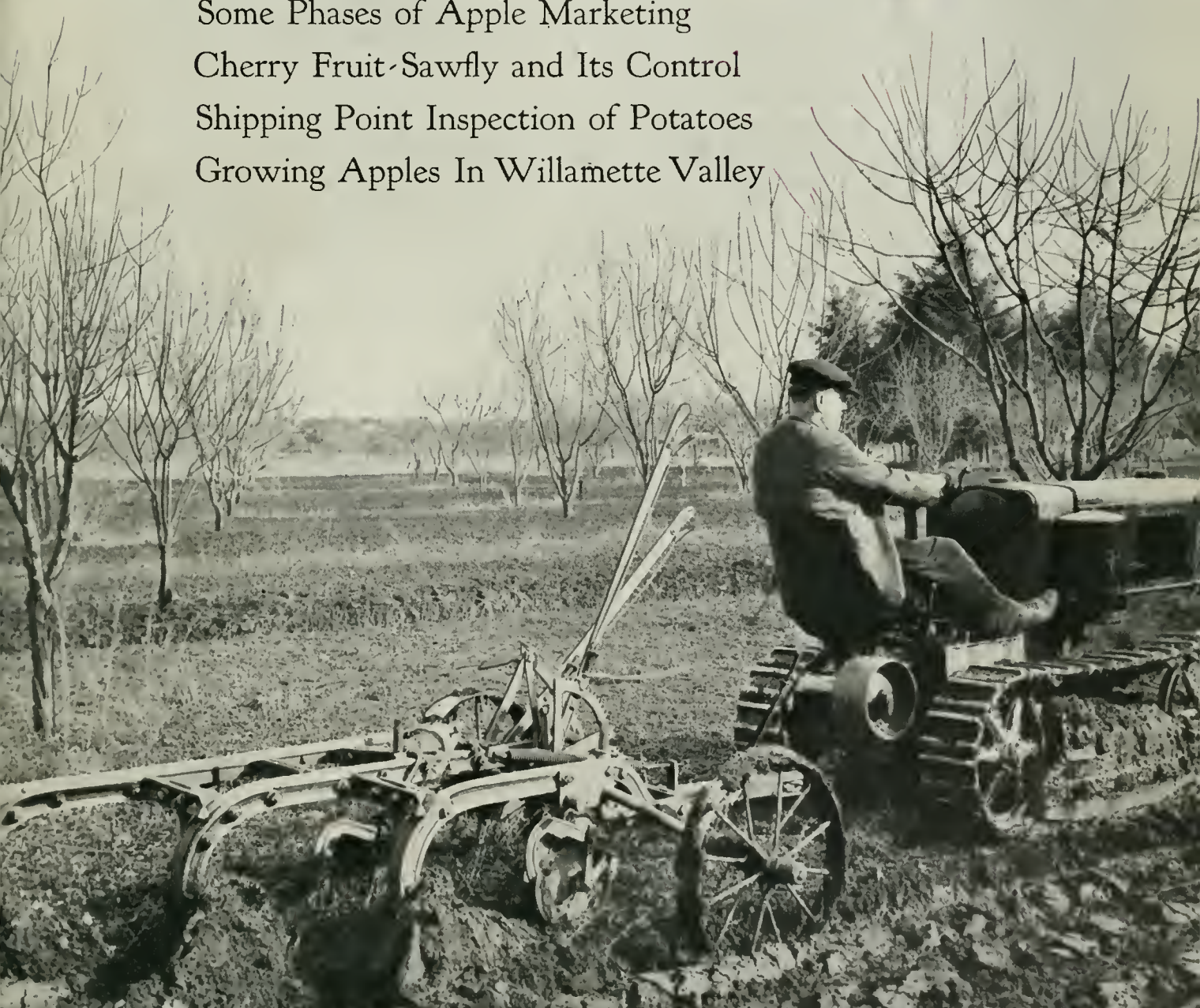
The Pioneer Horticultural Journal of the Pacific Northwest

APR 18 1922

Features In This Issue :

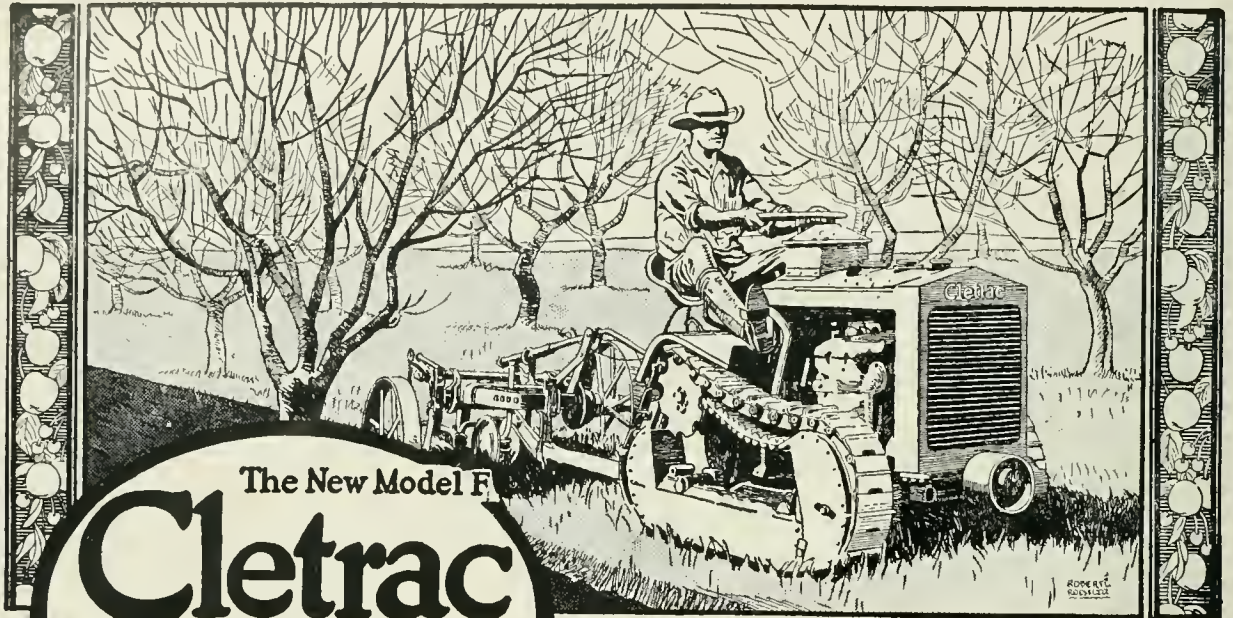
Pests of the Strawberry Industry
Crown Gall, Its Cause and Cure
Some Phases of Apple Marketing
Cherry Fruit-Sawfly and Its Control
Shipping Point Inspection of Potatoes
Growing Apples In Willamette Valley

B13-Columbia Univ Library
30 Dec 23



APRIL
1922

20 Cents
The Single Copy



The New Model F
Cletrac

Reg. U.S. Pat. Off.
**TANK-TYPE
 TRACTOR**

\$795

*Unbeatable for
 Orchard work*

Complete, F. O. B. Factory



*Hard this way,
 but—*



*Easy on a track—
 The Cletrac Way*

The "impossible" has been done! A tractor that is unbeatable for orchard work in addition to handling all other farm jobs, including all kinds of cultivating, has been developed!

With a complete range of usefulness for all farm work—with a price that is right in line with the demand of the hour—Cletrac F will actually make you figure the use of tractor power all over again.

Cletrac F does all your orchard plowing and cultivating, using the tools that you have on hand at present. It is low set and compact—works right up close to the trees without scraping bark or branches. Its remarkable short-turn ability allows it to swing from one row into the next with a single twist of the wheel. In addition—Cletrac F does all the regular farm jobs outside the orchard, including row-crop cultivation.

Its capacity for work is enormous—plows 6 to 8 acres a day—discs 15 to 20—harrows 20 to 25—and withal it is so simple, care-free and accessible. Equipped with a sturdy, powerful 4-cylinder kerosene, distillate or gasoline burning motor.

See your local Cletrac dealer or write our nearest office for full information.

THE CLEVELAND TRACTOR CO.

"Largest Producers of Tank-Type Tractors in the World"

19145 Euclid Ave., Cleveland

PACIFIC COAST FACTORY BRANCHES

LOS ANGELES, CAL. SAN FRANCISCO, CAL. SPOKANE, WASH.

1. Handles every farm job.
2. Plows 6 to 8 acres a day using any 2-bottom 12-inch plow.
3. Every part subject to wear constructed of chromesteel—weighs only 1820 lbs.
4. Automatically lubricated—no grease or oil cups.
5. Simple, care-free design—burns kerosene, distillate or gasoline.
6. Every working part quickly accessible.
7. Unprecedented value at \$795 complete.

Model "F" Cletrac is made in four sizes: 31 inches wide, with 8 inch clearance; 41 inches wide, with either 8, 14, or 18 inch clearance.

Scott Rainier Apple

WE ARE constantly on the lookout for new meritorious fruits, always of course with an eye to finding merits not already possessed by varieties already being propagated, for their are too many varieties now.

We heard of Scott's RAINIER many times and investigated it fully before contracting with Mr. W. W. Scott of Naches for the exclusive propagating rights which we now hold.

In our sincere judgment this is the finest dessert apple thus far developed. It has all the mild qualities of the Delicious, which commend it to the taste of those who cannot eat the more acid apples. But in addition it has a more spicy flavor and will keep firm in ordinary storage for weeks without becoming mealy, and in cold storage the RAINIER keeps perfectly for a year.

"THE keeping qualities of the RAINIER APPLE are unsurpassed by those of any other variety of the Pacific Northwest that has yet come to the attention of the U. S. Department of Agriculture. Its ability to retain its firmness, brightness and quality with almost no decay or skin blemish, places it above even the Arkansas Black, Winesap, and Yellow Newtown. In 32 degrees Fahr. cold storage it keeps in prime condition into May or later, and instances are known where large numbers of boxes have been held in excellent condition into September of the following year."—Bulletin No. 587 of the United States Department of Agriculture. (Page 28.)

"THE fruit is oblong and slightly inclined to conical. Flesh yellowish, with practically no grain. Probably better described as 'buttery.' Quality much resembling the Delicious, but a much better storage apple. Fruit picked during October, 1912, was placed on the table at the banquet of the International Refrigerator Congress, Chicago, in September, 1913 in perfect condition. Scale is unknown; decay practically so. Eating quality seems to improve rather than deteriorate. The tree is a vigorous grower and is inclined to be spreading, therefore capable of bearing heavy crop."—Lowther's "Encyclopedia of Practical Horticulture," Vol. 1, p. 231.

WE OFFER first-class RAINIER trees for spring planting. Also other standard apples, peaches, pears, plums, prunes, apricots, etc., small fruits, shade trees, shrubbery and roses.

WASHINGTON NURSERY COMPANY

Toppenish, Wash.



The Cost of Rotting Buildings Now Running into Millions

ROTTING buildings or rusting equipment are absolute waste, because a small investment in paint will save them. Property that is not protected by paint must either be rebuilt or repaired in a few years at a costly figure.

Check the costs. Compare the prices of paint and lumber, or repair parts. Can you afford to bear the expense of rebuilding or repairing your property, when to save it costs so little?

When you paint, make an additional saving by using the best paint. It spreads easily—saves labor cost. It covers more surface per gallon than "cheap" paint.

But more important, the best paint serves many years longer than "cheap" paint.

The best paints are scientific in formula and preparation. We've been making them for 73 years.

The best materials—PIONEER WHITE LEAD, pure linseed oil, pure zinc and pure colors—are combined in Fuller's House Paints in scientifically exact proportion with long-time skill.

House Paint: Fuller's Pure Prepared Paint. Phoenix Pure Paint, for painting houses. The purest best protective and most durable paint manufactured—32 colors.

Barn and Roof Paint: A protective coating for barns, roofs, fences. Dries with a good gloss and wears. Economical in cost and dependable in quality—6 colors.

Floor Paint: Fuller's Rubber Cement Floor Paint—a sanitary, waterproof and durable paint for floors of kitchens, closets, etc. Attractive in color and gloss. Dries hard over night—12 colors.

Implement Paints: Fuller's Pacific Wagon Paint, adapted for repainting agricultural implements, farm wagons, farm machinery, wind mills. A glossy, durable finish—7 colors.

Also makers of Fullerwear, the all-purpose Varnish, Silkenwhite Enamel, Fifteen-for-Floors Varnish, Decorat, Washable Wall Finish, Auto Enamel, Fuller's Hot Water Wall Finish (kalsomine), Porch and Step Paint, Silo Paint, Milk Can Enamel, PIONEER WHITE LEAD, Tractor Paint, and Fuller's Oil Stains.



Fuller's SPECIFICATION Farm Paints

House Paint - Barn & Roof Paint
Wagon Paint - Rubber Cement Floor Paint
Pioneer Shingle Stain

Manufactured by W. P. Fuller & Co. Dept. M-22, San Francisco

Pioneer Manufacturers of Paints, Varnishes, Enamels, Stains and PIONEER WHITE LEAD for 73 years. Branches in 19 cities in the West. Established 1849. Dealers Everywhere.

Free Book—Send Coupon

Send coupon for "Save the Surface," a free book which tells the importance of good paint, and the need for painting now if your paint is wearing off. Also ask for Fuller's "Home Service" booklet which includes Fuller's Farm (specification) Paints and Varnishes.



Ask our Specification Department any question that you'd like to have answered about painting—complete detailed advice is given free.

W. P. Fuller & Co.

Dept. M-22, San Francisco.

Please send me, without charge, a copy of "Save the Surface" and your "Home Service" booklet.

Name.....
Address.....
City.....State.....

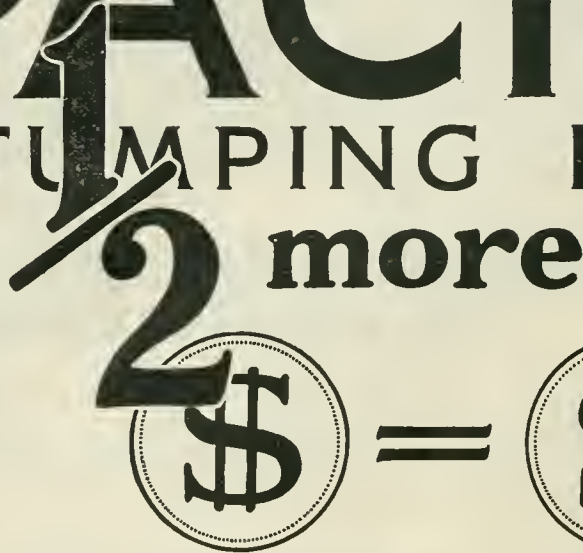
NON-HEADACHE



NON-FREEZING

PACIFIC

STUMPING POWDER



Your dynamite dollar -

-is now worth \$ 1.50

YOU can buy 130 sticks of Pacific Stumping Powder for only 50c more than you pay for 85 sticks of other stumping powders.

"Pacific Stumping," the new Du Pont Farm Dynamite, has approximately the same strength as other standard stumping powders and gives you equal work, stick for stick. Thus Du Pont Engineers have found a way to give you 1/2 more dynamite for your dollar.

The cost per stick is 2 1/2 cents (or 30%) less than other standard stumping powders. And, in addition, you won't get a "dynamite headache" from using Pacific Stumping and it will not freeze.

Think—this year, with Pacific Stumping, you can clear 1/2 more acres of stump land at the same cost you paid last year for dynamite, or you can clear the same amount as in 1921, at a saving of approximately 30%. Let Pacific Stumping help you make 1922 the biggest land clearing year of all. See your local hardware or general store merchant—and mail this coupon now.

E. I. DU PONT DE NEMOURS & CO., Inc.
Spokane Seattle Portland

Send to nearest branch office for free copy of "The Development of Logged-Off Lands"—a complete manual covering every use of explosives on the farm.



E. I. DU PONT DE NEMOURS & CO., Inc.
(Address nearest branch office)

Please send me free copy of "The Development of Logged-Off Lands."

Ask your County Agent how the Federal Farm Loan System will help you clear your land.

Name.....

Post Office.....

State..... (22)



BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOL. XVI

PORTLAND, OREGON, APRIL, 1922

NUMBER 10

Pests of the Strawberry Industry

By C. O. WEISS

District Horticultural Inspector, Everett, Washington

STRAWBERRIES are subject to only a few diseases in northwestern districts, but of insect pests there are quite a few that are already well established and have proven serious. This does not mean that the strawberry industry is doomed, as there is usually relief in sight. In all cases it does not mean that absolute control methods are present, but when certain methods are used and followed the industry can go on.

First and foremost, be sure and have your plants inspected in the field before setting out a new patch. Second, be sure that the patch you are setting is free from the diseases and pests by knowing past history and conditions of crops grown there. Also, if your neighbor's patch or your own patch is infested, protect your new one from them.

LEAF SPOT—Our most common disease of the strawberry throughout this district is the leaf spot. The disease makes its appearance on the leaf calyx and fruit stems. The spots are very small, deep purple or red, and are usually first in evidence on the upper surface of the leaves. Eventually they become gray or white in the center. The cause is a fungus which lives within the leaves throughout the year, remaining within the leaf during the winter.

Control measures are these: Plant only healthy plants, procured, if possible, from fields where the disease is not present. In any case, all diseased leaves from plants should be picked off before planting. The common practice of mowing off and burning leaves after harvest is beneficial, as it destroys the leaves with the fungus in them. If the trouble is serious, use Bordeaux mixture 4-4-50. Spray first before blossoming; second, after blossoming, and third, after harvest.

RHIZOCTONIA—The Rhizoctonia is a soil fungus which works in the soil and works its chief injuries by causing rots of the stem under the ground or by rotting off roots. The roots are rotted off and the top of the plant shows the effects by the outer leaves dying first, leaving the center leaves green. These often die soon also. Often the leaves

There is excellent promise that this season will be a favorable one for strawberry growers of the Northwest. Reports indicate that the plants have come through the winter in the best of condition, in nearly every district, and greater cannery capacity than ever before will be a helpful marketing factor. For the good of the industry it behooves every grower to be on the alert for diseases and pests inimical to the strawberry. The excellent resume on pests and control measures here presented by Mr. Weiss is that he gave recently before the Western Washington Horticultural Association convention.

turn reddish and then brown when dying.

There is no remedy except the rotation of crops to reduce the amount of fungus in the soil. There is one significant fact in connection with Rhizoctonia on strawberries that should be noticed. When this fruit is put on ground following potatoes, the Rhizoctonia is almost always quite severe. So do not follow potatoes with strawberries directly, but let some other crop intervene. Potatoes are always very subject to, and often severely troubled with Rhizoctonia, and when they have been in the soil leave a residue of the disease behind them. For the control of the Rhizoctonia, start a rotation, using crops known to be not affected by the fungus such as grains, grasses and clover.

FRUIT ROTS—Fruit rots result from the berries coming in contact with the damp earth and becoming rotted on the lower side. Sometimes other areas in the fruit become rotted. One form of rot that does this is the gray mold or Botrytis mold. Often the affected areas will become covered with a mass of gray mold. This trouble may spread and involve the whole fruit cluster.

Control of this trouble consists in avoiding a wet location, obtaining good drainage,

keeping the weeds down and also mulching to keep the fruit from the ground.

STRAWBERRY ROOT WEEVIL—The strawberry root weevil is by far the most injurious insect pest of the strawberry, in Washington. Just recently the serious nature of the pest has been brought into prominence because of the quarantine issued by the department of agriculture of the state of Washington, which prohibits anyone from selling, bartering or giving away strawberry plants that have not passed inspection.

The strawberry root weevil was undoubtedly introduced from Europe. The first report we have of it in this country is in Massachusetts in 1852. Since that time it has spread steadily westward and also northward. It was reported from Wyoming in 1893, from New Mexico in 1894, from Minnesota in 1895, from Montana in 1897, and from Washington in 1904. When we consider the fact that this insect cannot fly, but must almost depend entirely on outside agencies for transportation, its spread seems fairly rapid.

In a survey I have made, this pest has been found in many communities of Snohomish, Skagit and Whatcom counties.

DESTRUCTIVENESS—Strawberry root weevil is a pest both as a beetle and a grub. The beetles feed on the foliage, stripping and ragging it in a characteristic manner. The grubs, however, are by far the more injurious. They feed on the entire root system of the strawberry. The smaller grubs are usually found feeding on the fibrous rootlets, often devouring them entirely or barking them so they die. A seriously infested plant may be kicked out with the foot or easily pulled up, often with the fibrous root system eaten away.

Undoubtedly a portion of the grubs feed close to the main tap root and their feeding there will sometimes girdle the crown. The larger grubs are often found buried in the tap roots and this food seems to give them a more pinkish cast, giving rise to the common belief that two species of larvae are present.

The beetles may be present in a patch

for years and but little injury result from their attack. In certain localities they have been observed for several years, yet even the older fields show no apparent injury.

A common practice is to plant in the early spring, cultivate well the first season and keep down all the runners. A half-crop is expected the next season and a full crop the second season, or the third spring from planting. Ordinarily the field is kept as long as possible to derive profit from it and often, in the infested districts, it is kept too long.

In the weevil districts, under normal conditions, an infested patch will show a few sickly hills the first season; small patches here and there dead the next season, and the patch rendered worthless the following spring. A condition that is becoming quite common, however, is for the patch to be materially weakened the first season, and the second season, when it is expected to yield a full crop, the patch is absolutely worthless.

Two factors make this condition possible. The soil is often infested with grubs even though strawberries have not been grown on the ground previously. Again, the beetles from infested beds all about tend to concentrate on the new patch.

HOST PLANTS—While the root weevil is a pest of the strawberry it is by no means confined to this host plant. Both the larvae and the beetles have a wide and varied list of host plants to their credit. The raspberry, blackberry and loganberry may be attacked, but it is not believed that the weevil will prove a serious menace to these hosts. There is a list of seventy host plants for adult beetles and thirteen host plants for the larvae.

There is a statement abroad that the root weevil of the strawberry affects clover and therefore it is dangerous to plant strawberries on land that has grown clover. According to Professor Lovett of Oregon, who has made quite a study of the weevil, and also Dr. Melander of Pullman, this is not true. Clover is affected by a root weevil that is very similar to the strawberry root weevil, a near relative to it. However, this clover weevil will not feed on the strawberry.

HERE are short descriptions of the beetle and the larvae. The adult weevil is a snout beetle nearly one-fourth of an inch in length. The color of the insect varies from a dull reddish brown, when freshly emerged, to almost pitch-black. The surface is roughly pitted and slightly shiny. The beak is short, broad and emarginate at the tip. There is a distinct puncture between the eyes, the antennae are elbowed and consist of nine segments.

The larvae, when seen eating, were of a pinkish tinge, but when compelled to fast, became white. The full grown larva is three-eighths of an inch long by one-eighth of an inch wide, white in color except the

head, which is light brown. The body is arched.

The strawberry root weevil is single brooded. The adult beetles remain alive and active for more than a year. There are for a short period of time, two generations of beetles present. These are busily engaged in feeding on the foliage of the strawberry, and other hosts, ragging and stripping it. The insects pass the winter in both adult and grub stage.

The beetles pass the winter in all conceivable sorts of places. Many hibernate in the soil close about the crown of their host or crowded down into the sheaths about the central whorl of the crown, also under heaps of debris about the field and fence corners, or under boards and loose bark. The more mature grubs pass the winter in the soil about the roots of their hosts. The majority pass the winter as nearly mature larvae, feeding to a limited extent on their hosts.

The beetles feed at night, and during the day crowd down in the dark sheltered places. They will often be found in numbers under a clod, in a crevice or crack in the soil, or crowded down about the crown of the plant itself.

CONTROL MEASURES—In spite of a great amount of careful and conscientious investigation in Canada and in Oregon no really practical and satisfactory measures have been developed. Taking into account the inability of the beetles to fly, the idea of a barrier about the newly set field to keep them out was thought of. The barrier used consisted of twelve inch boards, placed on edge about the field, well braced from the inside, all the joints carefully fitted and made insect-proof. A strip of tin was tacked along the top edge of the fence projecting out over the edge about one and one-half inches.

The barrier proved reasonably effective in excluding the weevil and although the cost of construction is considerable, the idea is not impracticable. This plan has never proved popular with the growers.

The crop rotation plan, which is recommended by the Canadian and Oregon workers, seems the only one at present feasible. It is that of growing the plants only one full crop year and then destroying the field immediately after the harvesting of the main berry crop. Plant in the spring and cultivate the first season, take one crop the second season and plow up the field just as soon as the berries are off. Plow in mid-summer after the beetles have laid their eggs and also burn the strawberry plants so the larvae will not have anything to feed on. If plowed before this time the beetles will go to another patch in order to lay their eggs. It is also a good idea to have chickens in the patch while plowing.

We have observed that the weevil is more apt to be present on high ground than on low places. Previous to planting, dip plants in a tobacco solution, consisting

of four tablespoons full of black-leaf-forty and one-fourth pound of soap dissolved in five gallons of water.

Dr. Melander of the State College, at Pullman, tried drowning the weevil; burning out the insects; killing by contact with insecticides; soaking the ground with strong soap suds, oil emulsion, and solutions of borax and copperas; by using poisonous fumes and gases as chlorine, sulfur-dioxide, acetylene, and gasoline, kerosene, turpentine, chloroform, etc., but none of these treatments seem effective and, in many cases, the plants were killed.

OF THE soil fumigants the cyanide gas and the carbon-disulphide 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.

The carbon-disulphide was used by putting a couple of tablespoonsful in a saucer every three feet, under a piece of oil cloth or canvas made gas proof by painting with linseed oil or other material, and covering about six feet of the infested row. This liquid evaporates quickly and the fumes, being heavier than air, sink into the soil. As they are poisonous the fumes destroy the grubs and the beetles also. Cover the edges of the canvas with dirt and leave covered for six hours.

In many cases last spring where the weevil was quite serious we advocated the use of nitrate of soda to insure the growers a crop of fruit. Our idea was to prolong the life of the plant. We also used a chemical known as paradichlorobenzol which is used in combating the peach borer. It seemed effective in a small measure and in some cases where it was applied the plants seemed healthy and more vigorous and we could find no weevil. In other cases we found the grubs inactive and of a darker appearance. On further study of the chemical, we learned that the crystals did not give off their gas under wet conditions and perhaps it would be more effective in sections where the climate is drier.

CROWN MINER—This pest is a small worm that works entirely within the crown of the strawberry plant, constructing its tunnels there, and burrowing about. The worm is slender and pinkish in color with a brown head. The adult is a small moth. For its control plowing up the infested plants is the method recommended.

STRAWBERRY ROOT BORER—The root borer is a serious pest to the strawberry. The larvae are white and elongated, with a brown head. They feed on the interior of the crown and the tap root of the plant, eating out the entire heart. The plant, as a result, looks sickly and when pulled up will often break just below the crown, exposing the tunnel and often the larva itself.

The adult insects are clear-winged moths. Dig up and destroy infested plants, preferably in late fall or early spring.

(Continued on page 25)

Cherry Fruit-Sawfly and Its Control

By W. P. DURUZ

Division of Pomology, University of California

THE cherry fruit sawfly, *Hoplomampa cookei* (Clarke) does considerable damage to cherries and plums in certain fruit districts. The insect has not spread rapidly, so control measures have not been very urgent. Severe loss, however, has occurred at times to a few California growers, and it is necessary to have a full understanding of the insect and the latest remedies that will check any outbreak in the future.

F. B. McKeivitt, Jr., of Vacaville, experienced great loss in his plums from the cherry fruit sawfly in 1920, and it was at his suggestion that a study of this insect was undertaken, with a view of working out a satisfactory control. He generously volunteered the use of his orchard and made spraying treatments as suggested. This is a report of the one season's work, which has revealed the habits of the insect and some points, thought valuable in controlling it.*

NATURE OF INJURY—The larva of the cherry fruit sawfly attacks the small fruits of the cherry, (sweet and sour), plum and prune, and, occasionally, apricots and peaches. It also feeds on wild plums and willows. Mr. McKeivitt describes the injury as follows: "The plums were apparently all right until they were about as large as peas, when they turned yellow and dropped off."

The presence of the larva is first apparent from a dark decayed area on the very small fruit (Fig. 1). On cutting open one of these fruits, the small whitish slug-like larva is revealed. It is from one-eighth to one-fourth inch long, always rests in a curved position and feeds on the kernel and much of the fleshy portion of the fruit. If the kernel is hard, only the flesh is eaten.

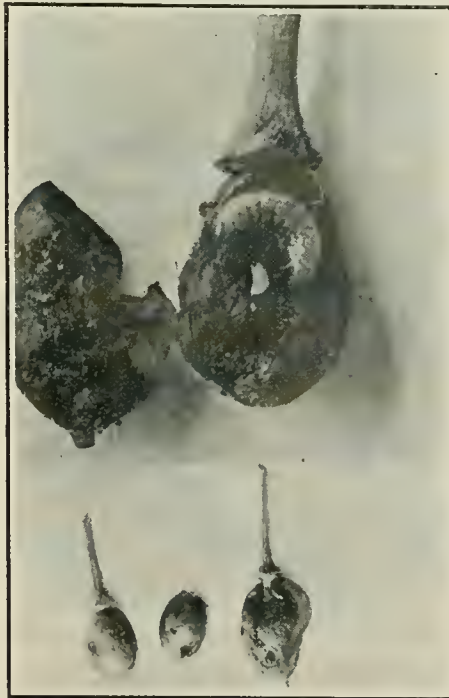
The injury is even more noticeable from the clean round holes bored into the fruit by the larva in entering and going out of the fruit (Fig. 1). One larva may injure three to four fruits and cause a loss of from fifty to ninety per cent of the crop. Mr. McKeivitt estimated his loss in 1920 at \$3,000 on Diamond and Grand Duke plums alone.

DISTRIBUTION—According to Professor Essig† this insect is distributed throughout Central California and as far north as Southern Oregon, where it has been found in the Rogue River Valley. The insect was first found in Suisun Valley, by Matthew Cooke‡ in 1883. The writer has found this insect in plums and cherries in the McKeivitt orchard and at the Bucktown ranch at Vacaville.

LIFE HISTORY OF THE ADULT—Foster§ states that the female sawfly appears in the spring about the time the

early varieties of sweet cherries—Chapman, Black Tartarian, etc.—are beginning to bloom. The adults are mostly black with yellowish or reddish-brown appendages. They are about one-eighth inch long, with broad body and have two pairs of well developed wings. They are usually quiet, especially early in the morning, but as the atmosphere becomes warmer toward noon, they flutter about in the trees in search for places to lay their eggs.

THE EGG—Egg laying (in the Suisun Valley) begins about March 20. The eggs are laid by the females in the sepals or upper part of the calyx cups of the expanding blossoms. The sharp ovipositor or "saw" is used to make the incision in the tissue and for placing the eggs. The eggs



Above: Larvae of cherry-fruit sawfly feeding on cherry fruit. The kernel has been eaten. Below: Plums damaged by sawfly larvae.

are usually deposited singly just before the petals open.

THE LARVA—The time of hatching of the larva coincides closely with the falling of the petals from the blossoms of the variety attacked. Upon hatching it soon finds its way to the bottom of the calyx cup and eats directly into the newly formed fruit and devours the kernel, which it prefers. The fruit thus injured turns yellow and withers. The larva then attacks a second fruit, entering it any place on the surface and, as in the first attack, eats out the kernel if it has not hardened.

The second fruit, being larger, usually withstands the effects of feeding longer. The growth, however, is checked and it

gradually turns a pale green color and hangs on the tree (Fig. 1) for some time. A third and sometimes a fourth fruit may be attacked in this way. One larva usually destroys three fruits while some attack four.

When full grown the larva leaves the fruit and makes its way to the ground, where it pupates.

THE PUPA—Foster states the following, relative to pupation: "The larva constructs a small parchment-like cocoon which is found three to seven inches below the surface of the ground. The outer surface of the cocoon is covered with fine particles of soil, giving it the appearance of a small clod of dirt. The larva remains as such in the cocoon until the following winter. Some time after the winter rains begin it transforms to pupa and emerges the following March as an adult. The pupa has not been observed. There is only one brood each year."

CONTROL EXPERIMENTS—P. J. O'Gara †† of Medford, Oregon, had conducted experiments for three years which led him to state in 1913 that two to three applications of arsenate of lead would control this insect. Mr. Foster recommended spraying with a three per cent distillate-oil emulsion, to which had been added nicotine sulfate at the rate of one part to 2000 parts of water, same to be applied in the early mornings when the adults are on the trees, but very sluggish.

These are the only suggestions ever published on control measures.

AS HAS been stated, Mr. McKeivitt offered the use of his plum orchard, which was known to be infested with this insect. The trees selected were about 25 years old and of the Diamond and Grand Duke varieties. Nine blocks, of twenty trees each, were selected, and each block given a different spray treatment, (see table). A power sprayer was used and the spray applied with spray guns.

Counts of infested and non infested fruits were made throughout the different blocks. Obviously, all the young fruits on such a large number of trees could not be counted in the time available, so careful estimation was used to supplement the actual counts. Casual observations of interested persons coincided with the counts

(Continued on page 24)

*The writer is indebted to Messrs. F. B. McKeivitt, Jr., and George Allen for their hearty co-operation and assistance in conducting this investigation.

†Essig, E. O., Injurious and Beneficial Insects of California, Monthly Bulletin State Commission of Horticulture, Volume IV, No. 4, 1915.

‡Injurious Insects of Orchard and Vineyard, pp. 137-138, 1883.

§Bulletin 116, Part III, Bureau Entomology, Department of Agriculture, 1911.

††California State Commission of Horticulture, Monthly Bulletin, Volume, III, No. 1, pp. 31-35.

Crown Gall, Its Causes and Cure

ROOT knot, crown gall, or black knot that affect all stone fruits and nuts and even apples and pears, seem to be native to many of our soils. There are numerous instances of crown gall in nurseries on land where tree have never been grown before. No nursery on the coast can boast of having never had a knotted tree, though no affected tree is knowingly permitted to go out for planting.

The black knot on the vine is said to be the work of the same species of bacterium that produces tumors on peaches, almonds, etc., and is found all over the world, on many kinds of trees, bushes, vines and plants. In vineyards the aerial form is not infrequently found growing on one-year wood, and this is attributed to injury from early frosts and the infection entering the cracked bark. On trees, as every one knows, the galls that we have learned to dread are those that occur near the surface of the ground, or on the main roots near the surface.

In an excellent discussion of the disease in the *Sunsweet Standard*, M. A. Benjamin tells how to go about curing it. The grower should dig down around his trees where conditions of growth indicate trouble, looking for root-knot just in the same way as he does for borers. It is only on the crown or the main roots that work is applied—don't bother about any knots that may be on roots away from the tree. When gall or root-knot is found, cut it out with a chisel or gouge, cutting down in the center till a concave is formed, because it seems to go down to a core like a corn.

After having been thoroughly cut out clean and the chips cleared away, the wound is disinfected with a strong creosote and then painted with a good stiff roofing paint. The aerial form, that is galls appearing on the trunk or on the branches above the ground—are always easily destroyed, but the others need more attention later in case of reinfection.

Those trees whose habit it is to be shallow-rooted have shown themselves to be more susceptible to root-knot. This may be because the roots are more easily subject to injury from plow or cultivator than those rooting deeper. It is suggested that a good many galls appearing just below the surface are the result of injury by gophers, the gall bacteria entering through the wounds so made.

While infection undoubtedly takes place during the dormant season, it remains latent till growth starts in the spring and the galls form during the actual growing season. The rate of the growth of galls as well as the appearance of new galls is proportionate to the growth the trees make.

There seems to be a steady rise in the rate of appearance of new galls from the first to about the sixth year; a slackening of the pace for a couple of years following,

with a possible decline in later years, when the rate of growth is decreased or it comes to a standstill. It should therefore be possible, by removing the galls from the trees, during the first eight years or so, during which nearly all their growth is made, to ultimately reach a condition when there would be so few new galls coming as to be every year for good results.

As for reinfections, while these do occur, the low rate of their appearance, something like ten per cent, is not such as to warrant great concern.

A lower rate of reinfection might be obtained by using some soil stimulant containing copper sulfate, which has been successfully used by the writer. This will have to be used with caution.



Tree from which crown gall has been thoroughly chiseled out.
(Courtesy *Sunsweet Standard*)

CROWN gall bacteria cannot enter into perfectly sound tissue and infect it. There must be a wound or abrasion—no matter how small. It is hard to account for some galls on the basis of mechanical injury. Most of those one finds are apparently traced to bruises caused by overlapping roots galling one another so as to expose interior bark. Judicious pruning of the roots at planting time will help reduce this risk.

The practice of leading water to the base of trees with a shovel is to be deprecated. There are no feeding roots there to render it necessary and there is danger of injury to the tender bark of the roots through which infection may enter, the moisture aids in the production of fungus and bacteria.

In treating some trees for crown gall, it is necessary, in cutting it out, almost to

girdle the tree and when this is done it is best to bridge graft. When doing this you are supplying the upper part of the trees with nourishment.

The important step in bridge grafting is preparing the wound to receive the grafts. The injured parts should be thoroughly cleansed, all dead tissues cut away and the cleansed surface should be treated with creosote and then painted. The irregular edges of the bark should be cut back evenly.

The scions which form the bridge should be selected from wood of the previous season's growth. Either branches which grew the preceding season or water sprouts that are only one year old may be used.

It is important that the scions should be a little longer than the space to be bridged. This is in order that the middle portion of the scion, when put in position, shall arch slightly over the central part of the wound.

Before being placed in position, the scions are beveled at each end, both surfaces being on the same side of the scion. This beveling should be done with a long, sloping cut, so that the wedge-shaped ends thus formed will be relatively thin, to permit their being thrust well under the bark without danger of separating it unduly from the cambium at the points of insertion. The placing of the scions in position is facilitated if the bark at the margins of the wound is slit for a short distance at the points where the ends are to be inserted.

The number of scions required for a bridge will depend largely upon the size of the trunk. No fixed rule can be given. The larger the number the more complete will be the restoration of the connection between the parts above and below the wound, but if placed too close together the bark at the margins of the wound between the scions will be raised. The starting of the bark except at the immediate points of insertion of the scions must be avoided.

In placing the scions it is of the greatest importance that the cambium of the scions which are exposed in the sloping cuts at the ends be brought into intimate contact with the cambium that lies under the bark at the margins of the wounded area.

THE union of scion and tree can occur where the cambium layers of the two come together. The scions may be secured in their proper position, if need be, by driving a very small nail through each end into the trunk. This will aid in drawing the cambium of scion and trunk closely together. The operation is completed by thoroughly covering the area occupied by the ends of the scions and the margins of the wound with grafting wax, strips of waxed cloth, or by some other means that will adequately prevent these parts from drying out.

If the wound is mostly below the surface

(Continued on page 27)

Shipping Point Inspection of Potatoes

By W. H. WICKS,

Director Bureau Plant Industry and Acting Director Bureau Markets, Idaho Department Agriculture, Boise.

In view of the fact that fruit and vegetable growers of the country seem to have won their fight for general adoption of shipping point inspection of their products by the government, this article on the subject is considered timely and informative. Potato growers have been in the vanguard in working out with government bureaus satisfactory methods of conducting such inspection. The benefits to this industry have been many, as Director Wicks here sets forth from experience with the inspection service in Idaho.

ON JULY 1, 1921, the Idaho State Department of Agriculture consummated a formal agreement with the Bureau of Markets and Crop Estimates, U. S. Department of Agriculture, pertaining to standardization and inspection work.

The objects of this agreement are: (a) To aid in the improvement of existing standards for fruits and vegetables and to establish standards for fruits and vegetables not already standardized, giving due attention to the desirability of establishing, so far as practicable, such standards in conformity with those promulgated, recommended or proposed by the Department of Agriculture of the United States. (b) To develop further the shipping point inspection service in the state of Idaho, with special reference to the co-ordination of such work with the food products inspection service, now conducted in central markets by the United States Department of Agriculture.

The method of procedure consists of the employment by the United States Department of Agriculture, of a supervisor inspector, who works with the director of of the Bureau of Plant Industry, Idaho Department of Agriculture, in developing the Idaho shipping point inspection service in accordance with the general policy of the United States Food Products Inspection Service. The Idaho Department of Agriculture must approve no permanent changes in existing horticultural laws without consulting the Federal Bureau of Markets and Crop Estimates.

From this agreement it is seen that state grades and standards are promulgated in harmony with federal grades. This arrangement makes it possible for shipping point standards and certificates used to be practically the same as those used by the Federal Bureau of Markets and Crop Esti-

mates in making inspections and transacting their work in terminal market inspection points. This co-operative agreement has done much to overcome the undesirable features of state shipping point inspection during 1919 and 1920.

CROP AND DATA INSPECTION RECORDS—Using figures of the Idaho Crop Reporting Service, we find that the potato crop of Idaho for 1921 was placed at 10,545,000 bushels. This crop was produced on 57,000 acres with an average yield of 185 bushels per acre. Allowing 90 cents per bushel as the average market price for all varieties, the potato crop had a valuation of \$9,490,500.

In point of production Idaho is out-classed by Maine, New York, Pennsylvania, Michigan, Wisconsin and Minnesota, in the order given, placing Idaho seventh. In point of average yield per acre, Idaho is exceeded only by Maine, while in 1920 the two states tied at 180 bushels per acre. The average for the United States is 109.6 bushels.

The four states now having state and federal co-operative shipping point inspection are Washington, California, Colorado and Idaho. Comparison of estimated production and the rate of inspections up to December 1 is interesting. The carlot figures are:

State	Car Shipm'ts	Cars Inspected	Per Cent Inspected
California	3423	400	11
Colorado	7844	7500	95
Idaho	6672	6156	92
Washington	2964	800	26

Production of these states may prove interesting. The 1921 figures, in carloads, are these: California, 84'9; Colorado,

18,000; Idaho, 10,500; Washington, 6,000.

We call attention to the fact that Colorado has a compulsory law which makes it necessary that all cars carry a certificate, while inspection is optional in California, Washington and Idaho. Of the three states maintaining optional inspection, Idaho ranks first, having secured 92 per cent inspection for all cars moved up to December 1.

POTATO GRADES—The Idaho official grades for the sale and shipment of potatoes are those established by the U. S. Bureau of Markets and Crop Estimates. These grades are: U. S. Grade Fancy; U. S. Grade No. 1 and U. S. Grade No. 2. These government grades are now also being officially used by Washington, Oregon, Utah, Colorado, Nebraska, Oklahoma, Texas, Minnesota, Ohio, North Carolina and New Jersey.

Idaho's record on grades since the inspection was inaugurated has been this:

Grade	Per Cent		
	1919	1920	1921
U. S. Fancy	0	0	.99
U. S. No. 1	90.9	92.02	86.18
U. S. No. 2	6.4	5.08	9.54
Comb. Fancy & No. 1	0.	0	.17
Comb. Nos. 1 & 2	0	1.18	2.9
No Grade	2.7	1.06	.22

HOW INSPECTION IS CONDUCTED—Shipping point inspection is offered by the State Department of Agriculture at loading points only, where trained inspectors are maintained and there is a sufficient tonnage and demand for inspection. During the year 1921 shipping point inspection

(Continued on page 18)



Loading potatoes at one of the 128 inspection points maintained in Idaho under joint federal and state management last year.

Growing Apples in Willamette Valley

By B. N. JOHNSON

Manager Oregon Apple Orchard Company, Monroe, Oregon

UP IN OUR section the natives long were prone to regard me as a "nut." They said I was crazy in head and that my associates had more money than brains if we thought we could raise fruit on those "squirrel lands;" that those red hill ranches were only fit for goat pasture.

During the past couple of years some of them are changing their tune, however. They have seen the fruit we are growing and some of them now say, "I always said them red hills are the best fruit soil in the world." I quite agree with them.

My observation leads me to the belief there are too many "doctors, lawyers, merchants, thieves," engaged in the business and not enough real honest-to-goodness fruit growers. It would be a good thing for the industry if a lot of them could be prohibited by law from further activity in the game.

We should not lose sight of the fact that raising apples is a highly specialized industry. Given the soil and climate necessary, production of the high grade apple is, to an extent, dependent on the attitude of mind of the grower. It is a mistake to attempt to grow corn and hogs, run a dairy, raise grain and 57 other varieties of farm products, along with raising apples. If you want to diversify, diversify with fruit. If you are going to stay in the game, raise fruit exclusively. Specialize on size and quality.

A man with an apple orchard of five acres or less invites disaster. A 10-acre unit should be the minimum for apples. Twenty acres would be better, and I am inclined to the belief that 30 or 40 acres of tree fruits—probably somewhat diversified—would be still better.

Another thing—apple raising is not a poor man's game. The trees should be pruned and sprayed and tilled each year, whether you have a crop or not. It is a dangerous undertaking to attempt development of an orchard unless one has the means or an income sufficient to defray the expenses of development up to the time the orchard comes into profitable production. This means 9 or 10 years in the Willamette Valley for an apple orchard, and at a cost of \$500 an acre in good American money.

Ten or 15 years ago we were handed a lot of bunk about being able to bring an orchard into profitable bearing in six years at a cost of from \$150 to \$200 an acre. It can not be done. That is why a lot of growers have become discouraged.

As a general proposition, I maintain that apples of size and quality can be grown in the Willamette Valley at a profit. Too much care can not be exercised in selection of the land for an orchard. Before

Here are presented salient features of a meaty practical paper read before the annual meeting of the Oregon State Horticultural Society. It is a matter of some regret that other excellent points touched upon by Mr. Johnson can not be given space here. From his experiences, for instance, he has come to be a strong advocate of early picking and shipping. His paper quoted at length from other authorities by way of driving home the value of almost ruthless thinning. It is important, in reading of results he mentions, to have in mind the fact that most orchards in irrigated sections have nearly twice as many trees to the acre as do the Willamette Valley orchards.

we planted ours we had several thousand acres under option and before the purchase of any land we had it examined, bored and tested by a soil expert from the agricultural college—Professor H. D. Scudder. We followed his recommendations in the purchase and subsequent planting of the land, and since then have been impressed with the wisdom of this course.

I can not give the growers any hard and fast rules to follow that will insure the raising of good fruit. Each grower has his individual problem. Soil conditions and pruning methods vary. Uniform orchard practices are not followed.

DURING the past four years we have experienced little difficulty in developing size, color and quality. This required attention to five important details—pruning, spraying, fertilization, tillage and thinning—with emphasis on the last two, tillage and thinning.

Without plenty of light and air, apples will not set well nor color properly. Hence it is important that trees be kept open by means of intelligent pruning.

We follow the spraying program as outlined by the specialists at Oregon Agricultural College. Most of our spraying is done with outfits using 300 pounds pressure or better, and at the proper time. We applied seven sprays during the past season. Our warehouse foreman informs me that our culls did not exceed three per cent of the crop.

Cover crops and artificial fertilizers, preferably both, must be systematically used if best results are to be obtained. Plowing, two double discings and two or more kimbarrings or harrowings constitute

a minimum tillage program. Years when plowing is omitted, a third double discing might be added with good results.

At Monroe we do not follow any hard and fast rule in thinning. While six inches is a general gauge to follow, the variety, the condition of the individual tree, as well as the set of fruit, are all factors to consider in thinning operations. During our thinning season we had as high as 75 per cent working, at a cost of \$22.64.

Always take off the undersized fruits, regardless of their position on the tree, is one safe rule to follow. If an apple is perceptibly small at thinning time it is almost certain to be in the five-tier class at packing time. Thin early, thin thoroughly and always thin off the doubles and the little ones.

We took off easily 75 per cent of our Ortleys last season, and yet many of the trees were overloaded. Always thin heavily on Jonathans and Grimes. These varieties tend to grow small and the trade does not want the small ones. While 10 per cent of 175s and smaller will usually be accepted, many orders received by us last season provided for 163s and larger, no five-tier stock being wanted.

WE HAD one block of 60 acres of apples which show a net profit of \$75 to \$100 an acre for the season. It is planted to Kings, Spys, Newtowns and Ortleys. It produced between 12,000 and 15,000 boxes of fruit. On this particular section the tillage was \$5.20 an acre; spraying \$17.95 an acre, including cost of spray materials; pruning, \$16.25 an acre, and thinning, approximately \$12 an acre.

Including overhead and miscellaneous expenses, the cost of producing a crop on this section will run about \$60 an acre. We estimate the tree-to-car expense at 60 to 65 cents per box. Based on a crop of four boxes to the tree, or 200 boxes an acre, at 60 cents per box, we have a tree-to-car expense of \$120 an acre and a production cost of \$60 an acre, making a total of \$180 an acre, or 90 cents a box, for all grades and varieties.

Cost of production, including physical handling, should not exceed \$1 per box, and ought to be kept down to 75 cents per box as production increases.

In this connection I would strongly advise more attention to the production of apples of size and quality. If it is going to cost 75 cents to \$1 per box to get our apples grown and loaded on cars, no financial expert is required to show us that we are losing money on nearly every box of C grade or five-tier apples we ship. In my judgment, the best thing that could happen the industry here would be the definite

and immediate refusal of the trade to accept our small apples at any price.

It would be far better for all of us if we could build and operate large by-products plants in every producing section in the Northwest. The plants should have capacity to convert all of our C grade and

five-tier apples into cider, vinegar, jelly, jam, dried apples, and the like, at a normal price per ton. Such action would restrict the output of the Northwest probably 50 per cent, and would go a very long way in stabilizing the market and insuring to growers a good margin of profit.

Practically all of our extra fancy apples brought \$2 to \$2.50 per box f. o. b. shipping point the past season. At these prices we ought to make a satisfactory profit providing we are growing a large percentage of extra fancy and fancy grades, and have a

(Continued on page 22)

International 8-16 \$670 f. o. b Chicago and a P & O 2-furrow Plow FREE

The free Plow offer expires May 1.

TO every farmer who buys, for delivery before May 1, an International 8-16 Tractor purchased by one of our dealers on 1922 account, we will give a P&O 2-furrow plow—or tractor harrow if he already has a plow. He will pay only \$670 f. o. b. Chicago, for the tractor, and the plow or harrow will be given him absolutely free, f. o. b. Chicago.

The International 8-16 is not a stripped tractor but sells complete with this equipment—belt pulley, fenders, platform, throttle governor, adjustable drawbar, angle lugs, brakes. More than \$100 worth of essential features, not to be paid for extra but included in the new low price.

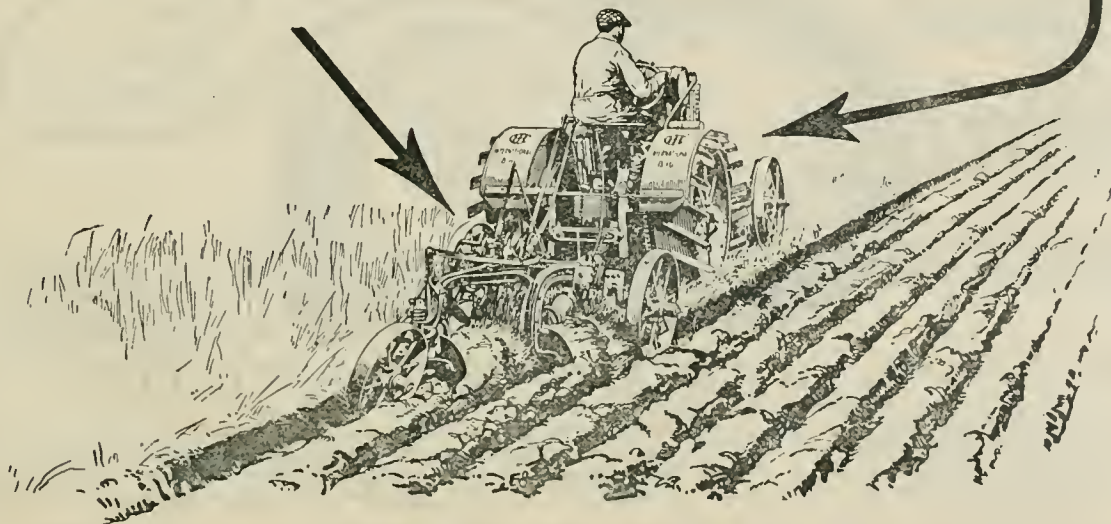
The famous Titan 10-20 Tractor now sells for \$700. Until May 1 this Company will give with each Titan, covered by the Special Offer, a P&O 3-furrow plow Free. Tractor and plow f. o. b. Chicago. Remember that the Titan is a 3-plow tractor, with belt power in proportion. The Titan has proved it will outlive two or three small inferior tractors. Figure that you get all these things—free plow, all equipment, reserve power, extra long life, a tractor unequalled for belt work—for \$700.

The free plow offer ends May 1. If your order has not yet been placed we urge immediate action. See the McCormick-Deering Dealer.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA U.S.A.
(INCORPORATED)

92 Branch Houses and 15,000 Dealers in the United States.



Some Phases of Apple Marketing

By H. H. MAYNARD.

Economics Department, Washington State College, Pullman

THERE are certain fundamental marketing functions that must be considered and no method of selling can be adopted which will eliminate any one of them. The buyer and seller must be brought together. Whether or not this can most efficiently be accomplished by a broker, working under the direction of a local sales manager, or an individual grower, is an open question.

Both methods have met with some success in the apple country in the past and both have certain admitted weaknesses. Certain it is that the broker must be used. Just how he may be used to the greatest advantage is a question.

My study leads me to believe that the use of a large sales agency which deals in all kinds of fruits and vegetables and can therefore keep its salesmen or brokers busy the year round is the best plan for most co-operative associations. Many large growers could use this type of agency directly and others would do better to use it through the local association.

It is possible that this can be most efficiently accomplished by means of a sales agency, owned by the farmers themselves similar to the method used by the wheat growers. This plan is being suggested and investigated by the National Farm Bureau. There are many difficulties in the way of the successful operation of such a system. Many of these problems are faced by no other type of farmer.

The wheat grower of the Northwest is essentially like the wheat grower of Kansas or Dakota; that is, he is pretty much the same kind of man racially, economically, educationally and socially. The same is true of the big stock men of the country

and of the corn and cotton growers. But it is not true of the fruit growers of the United States.

The man who raises early vegetables on the east shore of Virginia or in the Rio Grande valley of Texas, is not the same man who raises cantaloupes in the Imperial valley, citrus fruit in California, or apples in Washington or Oregon. He has a different racial history, different standards of living, and a different background in general.

It is a vastly more difficult thing to get these men together in co-operative enterprise than it is a few wheat men. Yet that is just what would have to be done if a growers' sales agency were to be successful. It must compete with the big sales agencies now organized to sell apples, fruits and vegetables. These agencies either own orchards and gardens in all these and many others sections or they represent growers or growers' associations in these widely different sections. Perhaps these varying nationalities and types could co-operate in the maintenance of a sales agency, but the history of the co-operative movement indicates that it would be almost certain to result in failure.

My conclusion on this point is that growers who wish to sell to other than cash buyers will do well to join a local co-operative association, being careful to retain control of the association in hands other than those of the sales agency, and then sell through one or the other of the two big associations or sales agencies. Many men prefer to sell for cash. The cash buyer is present to accommodate them and, in my opinion, always will be on hand.

HERE is another phase of the marketing problem. There have been certain weaknesses in the industry, due to the pre-

SERVICE
IS OUR FIRST N-AIM

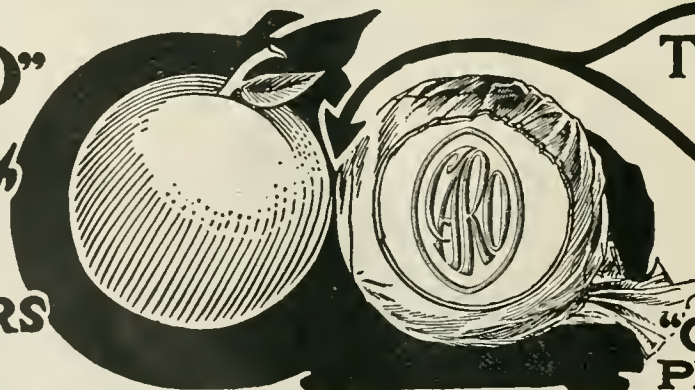
PERFECT
FRUIT LABELS

THE
SIMPSON & DOELLER
CO.
1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

**GET OUR SAMPLES
AND PRICES**

**WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.**

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED, "Caro" from DessiCARE (to dry up)

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrest the decomposition.

United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California

valence of too easy credit. Certain marketing factors have made a practice of advancing cash and supplies to the growers in order to secure control of their crop and be sure that it would be sold to them when ready to pick, pack and ship. The result is that growers have spent too much money during the growing season. They have not had the hand of necessity in a position to restrain them.

These growers have been optimistic and have spent this money in anticipation of repaying it from the returns from their apples in the fall and having a good surplus besides this left, on which to live the following year. When fall arrives they find their returns less than they had anticipated, for fruit growers know that this is much more liable to happen than the reverse. They find, in fact, that they have used up most of what their apples really brought them in net returns, during the summer. The only thing for them to do is to repeat the process and all too often the result has been the same year after year.

In the past the cash advance system was perhaps the only method of financing open to the growers. But now this is no longer true. The Federal Reserve system has provided for making growers' paper eligible for rediscount, when properly secured, and has provided for making the growing crop on the trees this security.

The grower can now go to his banker, get the cash he needs and be able to pay cash as he goes. He can pay cash for his orchard supplies and for his household and other expenses and, in the majority of cases, he can get better terms and prices than he time comes he is free to sell wherever he ever got from the cash buyer. When selling can get the best offer. He can use any one of the methods of selling which are open to him. He is on an open and above-board business basis, and can reap the profit of such a position.

Of course, this means that he must go to his banker with his statement of condition and with his crop estimate. In the past all too many farmers have been unwilling to do this. But it is hoped that the apple growers will cultivate a frankness in their dealings with their banker advisers which will permit them to go to them with their needs for financing and be taken care of on a business basis.

I believe that the cash buyer has a place in the industry, but I believe that this place is not connected with granting credit. Many growers prefer to sell for cash and to know that they will have the cash when the fruit is delivered. They also are willing to take less, if necessary, than they could secure elsewhere if they can have the cash and know just how much it is. They want to know how much they can depend on; how much they will have for new machinery; how much with which to buy additional land or an automobile, etc. These men, therefore, need to have a chance to sell to the cash buyer.

REDUCED

FORDSON TRACTORS \$230

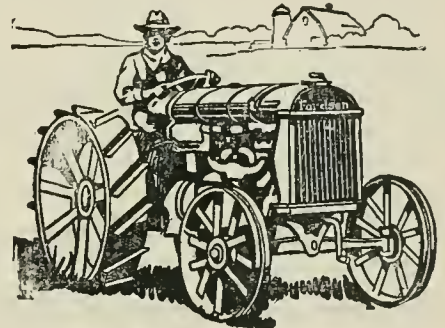
NOW \$395 F.O.B. DETROIT

New Price Makes FORDSON Possible For EVERY FARMER

Save your time by 30 to 50 per cent—make your work easy.

Save on labor—the FORDSON is the "Perfect Hired Man"

PLOW, disk, harrow, harvest, thresh, bale hay, saw wood, pump water, grade, pull stumps, fill the silo, grind feed—do these with your FORDSON TRACTOR. All the farm tasks which can be done by motive power, the FORDSON will do and do well. The 170,000 now in use in all parts of the country prove its efficiency and reliability.



The FORDSON dealer nearest you will make you a free demonstration.

Sign and Mail Coupon

Northwest Ford Dealers

Washington, Oregon, Montana, Idaho
706 Fairview Ave.,
Seattle
East Eleventh and Division Sts.,
Portland, Oregon

NORTHWEST FORD DEALERS
706 Fairview Ave., Seattle.

Please send me free information on Fordson Tractors. (Mark X in square opposite literature or service desired.)

Fordson Tractor Manual.
The Fordson at Work
Free demonstration. (State purpose for which tractor is intended.)
If you own a tractor state what make.

Name

Address

Musical Merchandise Write Us	WE SAVE YOU MONEY! <h2 style="margin: 0;">W. Martius Music House, Inc.</h2> 1009 First Avenue, Seattle, Washington Everything Known in Music	SHEET MUSIC Write Us
--	---	------------------------------------

Others are not speculative in their make-up. They prefer a sure thing in the fall to a chance of more returns in the spring or summer. Hence they throw the burden of the speculation on the shoulders of the cash buyer. If he carries this he must have an adequate return. Hence I believe that the cash buyer is an important cog in the marketing machine.

THE need for co-operative advertising cannot be too greatly stressed. People in the east must be made to see that the western apple is a quality product! that it is a staple and not a luxury. They must be made to see the superiority of the western boxed apple over the barreled product. They must be made to realize the value of the apple as a food. These

things and many others can be accomplished by advertising.

The Skookum, Hood River, and Big Y growers have done a great deal to accomplish these objects in the past, but the task is too big for any small group of growers such as these. They must have the help of the entire industry. This can be brought about by a co-operative campaign participated in by the growers of the Northwest without regard to what particular channel they choose for marketing their fruit.

It is time for the growers of Hood River to forget that they think they have the best apple on earth, and for Yakima and Wenatchee to do the same thing and get together for the good of the industry. It is time for the cash buyer to forget his jealousy of the co-operative association and for both of them to quit knocking the consignment house long enough to contribute to this campaign.

Apple production in the northwest is increasing. The time is coming when it may be difficult to market the fruit produced unless a corresponding increase in demand is created through advertising.

What, for illustration, would have happened to apple prices this year if frost had not destroyed most of the barreled crop? Stop and think of that question and then realize that the time is now here when the entire industry must get together to develop its market both at home and abroad.

Grafting Wax

By A. B. CLOUGH

CALIFORNIA walnut grafting wax is now being strongly recommended by horticultural experts, for use in orchard work of the northwest. In trials on walnut trees in California, where it got its name, it has proved more satisfactory than any of the other kinds. In the northwest it is also being used on deciduous trees, such as the apple, peach, pear, etc.

This preparation is now a little more expensive than some of the others, but its ease and efficiency of application more than make up for the difference in original cost. It is usually heated in a metal container until it is possible to apply it by means of a common paint brush. This saves much time, as most waxes must be warmed by friction with the hand and applied in the form of putty.

It is used principally in cleft grafting, bark grafting, and whip grafting, where it is necessary to cover all cut surfaces, immediately after the graft is made. A covering of this sort effectively prevents evaporation of moisture, prevents decay or growth of fungi, and protects the wound from the entrance of harmful insects.

California grafting wax is easily prepared by using 5 pounds of rosin, 1 pound beeswax, one-half pound powdered charcoal,

and one-half pint raw linseed oil. Heat the rosin and the beeswax together in a container, remove the heat and add the charcoal. This will cause considerable effervescence, so care must be exercised to prevent overflow of the mixture. After this mixture has been thoroughly stirred add the raw linseed oil and allow to cool. When cool it will take solid form and must therefore be heated for application.

▲ ▲ ▲

Early bearing apricots, peaches and crab apples are being planted along the roadsides in some California districts to serve as windbreaks for the main orchard.

▲ ▲ ▲

You do a double favor by mentioning BETTER FRUIT when answering advertisements you find here.

SAVE  **SAVE**

Orchard Sprayers
at Pre-War Prices

Old Outfits Taken in Trade

All sizes—hand or power outfits. Best obtainable. Get our prices.
SPECIAL—Barrel Sprayers at \$25.

QUALITY SPRAYER MFG. CO.,
215 Grand Ave. Portland, Or.

Protect Your Crop From Frost



A Night of Frost May Cost You an Entire Year's Profit.

Jack Frost works fast. Today you may have promise of a tremendous crop and big profits. Tomorrow—you may be facing terrible loss. Investigate the possibilities of frost prevention—write us without delay.

More than \$75,000,000.00 are lost annually through frost damage to growing crops, according to the U. S. Department of Agriculture. This is a tremendous toll to collect from the growers of the country. It may hit YOU next. Be prepared. Take no chances. Equip your orchard with the

“BOLTON” ORCHARD HEATER

Safest and surest frost prevention method known. Generates heat quickly, and maintains the temperature above the freezing point for a long time. Economical to operate. SEND FOR BOOKLET B-5.

W. R. AMES CO., Inc.

8th and Irwin Streets

San Francisco, California

Loganberries

By G. E. DAVIS

Sumner, Washington

THE big demand for loganberries and loganberry juice throughout the world has caused many growers to enter the field, which is a profitable one if properly understood.

The art of growing them is simple, if one has the knowledge. The two vital factors that enter into successful production of loganberries are soil and climatic conditions.

A good, well drained clay loam soil is well adapted to their culture. The ground should be thoroughly plowed and harrowed, ready for planting in April. When the tip plants are ready to dig, care should be taken not to get plants that are not well matured, as here is the reason so many young plants die.

The plants should be set 8 feet apart in the row, the rows 7 feet apart. That requires 775 plants per acre. The posts should be 7 feet long set 2½ feet in the ground, 32 feet apart in the row. This takes 210 to the acre.

There are several systems of trellising logans, but the most practical one is where 3 wires are used, all on the same side of the posts. The lower wire is put 18 inches from the ground; the middle wire 3 feet high, and the top one 4½ feet. The young canes are left on the ground during the growing season and, in fact, until spring, when the old canes are cut out and burned.

The young canes are taken one at a time, raised up over the hill to the top wire, then out four feet and down under the bottom wire and wound around, in the shape of a snail or else wound in the shape of a figure eight. This system gives a solid wall of fruit-bearing canes. Also, the berries are out where they can be seen. This is one thing that must be considered, as the loganberry has such short laterals it is very easy for the berries to be hidden from view, and the easier we make it for the pickers to find the berries the better it is for the grower.

Great care should be taken in picking, as one over-ripe berry in a crate soon starts to bleed, then mold and soon spoils the whole crate.

Just here is where many growers make their biggest mistake—in supervision of the picking. The old saying "Every picker needs watching" is pretty largely true.

If you grow good berries, pick them properly, and market them judiciously, they will net you a nice profit.

▲▲▲

"Lady Dryden," a Barred Rock hen belonging to Oregon Agricultural College, in the California egg-laying contest from December 14, 1920 to December 14, 1921, laid 324 eggs—a world's record for the breed.

Apples by Weight

IN RECENT years several fruit shipping organizations have adopted a system of sampling apples by weight in determining grades and sizes of apples packed for each grower.

The aim of sampling apples by weight is to speed up the movement of the fruit through the packing rooms, and to avoid the expense of repiling and checking which frequently arises in attempting to retain the identity of each grower's lot of loose fruit on the packing-house floor. A sample is selected from each lot of fruit received. This is graded and sized, and a record made of the weight of each grade and size in the

sample. The percentage relation of the total weight of the sample to the total weight of the lot is then applied to ascertain the weight of the various grades and sizes that make up the lot, and the grower is given credit for the total weight, classified as to grades and sizes.

Now the government has taken up the idea and has prepared accounting forms and data which will be of great service to those wishing to study or employ the new method. Details have been published in Department of Agriculture Bulletin 1006, on "Accounting Records for Sampling Apples by Weight."

▲▲▲

Advertisers appreciate knowing in what publication you found their proposition.

FRYER SERVICE
SINCE 1900

STANDARD

Gravity Roller Conveyors
Incline Elevators
Spiral Shutes

IN THE State of Washington, our representative will be permanently located in the Wenatchee and Yakima districts—while in Oregon, our Portland office will be in a position to care for all communications promptly. Speed in handling your orders is one of the many services we render our clients.

Write our Seattle office direct and your request will be taken care of promptly. We will gladly send you descriptive literature and quotations on these products.

D. E. Fryer & Co.

Dept. V. Lumber Exch.

SEATTLE

U. S. A.

BUTTE—PORTLAND—SPOKANE
TACOMA

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....303 Fifth Ave., New York

JNO. D. ROSS.....608 Otis Bldg., Chicago

SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.

COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.

ARIZONA—F. J. Crider, Horticulturist, Tuscon.

MONTANA—H. Thornber, Victor.

CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.

INDIANA—H. S. Jackson, Pathologist, Lafayette

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance; three years, \$2; five years, \$3. Canada and Foreign, including postage, \$2.00, payable in American Exchange

Advertising Rates on Application.

VOL. XVI. NO. 10

Inspection at Source

Reports from Washington give indication that growers and shippers of the Northwest are at the point of winning their fight for inspection of shipments of fruit, vegetables, poultry, butter and other perishable products at loading stations instead of destination.

The measure that may bring this about was introduced by Representative Summers of Washington state. It was adopted as a part of the agricultural appropriation bill and, unless there be meddlesome tinkering, will be enacted into federal law.

Were shipping point inspection a new and untried thing, Congress might find some justification for turning down the idea. But it is far from being new or untried. The article in this issue of BETTER FRUIT on shipping point inspection of potatoes in the state of Idaho quite convincingly sets forth both the practicability and success of this method. It would be difficult, even for a United States senator, to read the benefits as summarized in the conclusion of this article and still have adequate justification for opposing the growers' plea.

The senseless losses and injustices involved in the present inspection system demand a remedy. This remedy has been evolved. Congress faces the duty of applying it forthwith, and the great army of growers and ranchers should stand by and see that the job is promptly accomplished.

Wage Problem

Consideration of wage questions has been to the fore of late in fruit growing circles. Adjustments are taking place and must have place in the grower's plans for this season. Manifestly, since the country has been experiencing a period of falling commodity prices for some months, the trend of wages has also been downward.

The real problem which now concerns fruit men is a question of how much reduction there should be in wage rates.

There are those who hold that the country will this summer return to pre-war conditions and prices. They argue, accordingly, that wages should be put back to the pre-war basis—back to the point where 20 and 25 cents an hour was considered equitable pay, for all ordinary labor.

There is error in this conclusion. The fundamental error lies in the fact that the country is no longer in a period of falling prices. Manufacturing and wholesale prices have passed low ebb. Minor revisions downward may yet be expected in a few lines, but they are only such as must come from the retailers. In the basic industries, including such things as steel, copper, sugar and fabrics, prices now tend upward and not downward.

Even the prices of farm products reached the bottom of the decline some weeks ago and now are stiffening.

The fundamental fact to be borne in mind—in which all economists concur—is that the country will not return to pre-war prices of 1912-13 at this time. Every period of high prosperity is followed by at least one secondary upward swing of prices. Not until after this

second swing has passed can the country expect pre-war conditions and prices. We have entered this movement, and the wise man will lay his plans accordingly.

It is both wise and just to recognize the fact that we have not returned and will not return—for at least 18 months or more—to a pre-war status. Disregarding the scales of skilled workers, the wages of common labor have now been deflated about far enough. Labor prices this season will be below those of last season, but to seek to force them too low will entail only dissatisfaction and trouble.

The Radiophone

Use of the radiophone has come into its own in the Northwest with a rush. At first considered rather lightly as something that should amuse and interest the mechanically inclined boy, it has quickly won recognition as a valuable invention of far-reaching utility.

It is partly true that the radiophone is still popular chiefly for amusement purposes. But, mark the statement, its commercial uses are to be very extensive and valuable. These are in their infancy, but will be developed with startling rapidity.

If the boy wants to install a radiophone receiving set in your back-yard give him fullest encouragement. In another year your neighbors will be receiving frost warnings, weather reports, market reports and no end of helpful and interesting information over the radiophone.

Use of the radiophone will become as universal as use of the automobile. Every orchardist will have one. Cost of installation is quite nominal—that is, for the receiving set alone. Scan our advertising columns if you are suspicious about this boost. We are not thinking even of the endless amusement and entertainment features you will enjoy. In suggesting that you install a radiophone at your earliest convenience we have in mind only its assured commercial value to you in protecting and marketing your fruit.

Skookum Affairs

THE SKOOKUM PACKERS' Association held its postponed annual meeting at Wenatchee the middle of March and elected I. H. Logue, president; C. W. White, first vice president; A. E. Munson, second vice president; Miss Grace Lanphere, secretary-treasurer; J. A. Warman, general manager and C. W. White, A. E. Munson, J. W. Terry, F. H. Phipps, B. W. Johnson and P. M. Martin, executive committee.

A resolution was passed providing for the disbursement of \$10,000 of the assets to the shipping units in proportion as this sum had been paid in. The Seattle advertising office was ordered discontinued, thus centralizing the work of the Skookum Packers' Association at Wenatchee. Disbursement of the \$10,000 fund, it is believed, indicates a change in the advertising policy and the intention of the growers to spend less for this purpose.

According to a member of the association, who is also a member of the new United Apple Growers, the United Apple Growers' concern will be abandoned and no attempt made by this organization to use the Skookum brand. The members of the Skookum packers have until May 1 to complete their cancellation as members and those not completing cancellation will ship through the Skookum association as last year. No unit, so far as known, has completed cancellation. The Northwestern Fruit exchange will handle all fruit of the association as it did last year.

Preventing Leaf Curl

INFECTIONS of the destructive peach leaf curl may be fully prevented by thorough application of Bordeaux spray between December 1 and the early part of February, according to most excellent authorities. By George L. Zundel, extension disease specialist with the Washington State College, recommendation is made that the spray be applied soon after the leaves fall.

"Peach trees are not bearing fruit at this time of the year," he says, "but to help secure a good crop for the next season, fall is the time to spray in order to control the

peach leaf curl. This caused considerable damage to peach orchards this past year, the attack being the most severe that has visited in several seasons.

"In the early spring the leaves begin to curl between the veins, take on a reddish hue and finally all fall off. This necessitates the tree putting out another crop of leaves, which weakens it, and, if repeated enough times, causes death to the tree. In most of the cases, no fruit will be produced. Fall spraying, just after the leaves drop, is best.

"To get maximum results, use a solution of Bordeaux with the strength of 6-6-50, or even 8-8-50. Spring spraying is successful, provided the spray is applied

before there is any indication of the opening of the bud, in other words—spraying must be done while the buds are dormant. This is a very easy disease to control if the spraying is handled properly."

California horticultural authorities have been warning automobile and truck transportation concerns with reference to the state law prohibiting the transfer of nursery stock from one county to another without notifying the county horticultural commissioner at destination.

Latest edition of BETTER FRUIT just received. It is full of good things.—Luke Powell, Yakima, Washington.



FRUIT LABELS

Write today for
Samples and Prices
We welcome large
or small orders

The United States Printing
and Lithograph Company

Color Printing Headquarters

Seattle

San Francisco



DEPT. B.

Shipping Point Inspection of Potatoes

(Continued from page 9)

tion was available by authorized inspectors at 128 shipping points. Thirty-four inspectors were employed. Practically all demands for shipping point inspection on the part of growers or shippers were met with the exception of an occasional distant point where either the movement was too light or a satisfactory inspector could not be secured.

Uniformity of conducting the inspection service is maintained by the use of a book of regulations and instructions to inspectors. A chief potato inspector is employed, who spends practically his entire time giving personal aid to each inspector in the enforcement of these regulations and instructions. A supervising inspector of the U. S. Bureau of Markets and Crop Estimates works in conjunction with the Boise office and the chief inspector.

The fee for potato inspection per car in Idaho is \$2.50 and 1 cent per sack for less than one-half car lots. In Colorado it is \$2.50 per car; California charges \$5.00 per car and \$2.50 for half car lots or less. The rate is the same in the state of Washington.

At \$2.50 per car, 16,733 cars having been inspected from April 1, 1919, to December 1, 1921, the potato industry of the state has paid into the State Department of Agriculture in inspection fees a total of \$41,832.50. The fee is not sufficient to maintain inspection service most satisfactorily and should be increased to at least \$4.00 per car and preferably \$5.00.

OPTIONAL OR COMPULSORY INSPECTION—This is a decidedly debatable question. In order to secure the experience of the states operating under compulsory and optional inspection laws this question was asked of California, Colorado, Washington and Wisconsin authorities, with the following results:

California—F. W. Read, in charge of standardization service, reports:

"In my opinion, based on the experience we have had in this work, I would say that optional inspection is generally to be preferred."

Colorado—Wm. F. Allewelt, director Division of Marketing, believes in compulsory inspection, saying: "In my opinion, compulsory inspection is very much preferable to optional inspection, particularly when inaugurating the work in a new district. Honest, responsible, reliable growers and shippers, who take some pride in the product they put out and wish to maintain reputations for handling standard goods, are all strongly in favor of standardization and inspection."

Washington—Chas. L. Robinson, supervisor of horticulture, in reporting, states:



Casein Spreader & Adhesive

Kayso in your spray means a thin film of spray solution, spread evenly over every part of tree, foliage and fruit, giving complete protection against insect pests and fungus diseases.

Kayso is sold by all leading Pacific Coast dealers. Your local dealer should be able to supply you. If not, order direct or write for descriptive circular.

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY ST.
SAN FRANCISCO

277 BROADWAY
NEW YORK

740 TERMINAL ST.
LOS ANGELES

"In my opinion optional inspection is most desirable under present conditions."

Wisconsin—The experience of compulsory inspection in Wisconsin, as reported by B. B. Jones, in charge inspection service, State Department of Markets, is not only of value in this connection but also shows some financial benefits of Idaho standardization and reputation of the Idaho potato as compared with the Wisconsin potato. He says: "In the case of potatoes the inspection is compulsory and every carload of potatoes shipped from the state must be inspected by an official licensed state inspector. This is the first year such a service has been in operation.

"There was considerable opposition to the work to begin with, but as the service improves this opposition wanes and we hope to make it a permanent feature in this state. Our investigations have shown that shipping point inspection has been of considerable benefit to the potato shippers of the state. It has done much to improve the grade of potatoes being shipped out.

"In past years Idaho potatoes have been the standard in this section. We always have looked to Idaho for high grade stock and the dealers have always paid for it. We have always respected the good grade of potatoes that you have put on the market and to our minds it has been attributed to the careful way in which potatoes have been handled and graded."



In the opinion of the writer, shipping point inspection and standardization is yet too new to come to a definite conclusion as to the merits of optional or compulsory inspection, but as experience is gained in this State it appears that the weight of the evidence is drifting in favor of compulsory inspection.

BENEFITS TO POTATO INDUSTRY—
From experience of three years of potato shipping point inspection as conducted in Idaho, the following outstanding points suggest themselves as decided benefits to the potato growing industry of the state derived from the shipping point inspection work:

1. It enables the establishment of grades.
2. Secures a standardized pack and package.
3. It encourages better cultural practices.
4. It encourages the production of a higher grade of potatoes.
5. It encourages the use of better seed.
6. It makes a better class of growers and shippers who are less frequently inclined to evade standards and laws pertaining to honest marketing.
7. It is insurance and protection for the shipper.
8. The inspection is a protection to the growers who put up a good grade of potatoes in a community against neighbors who will not or do not aspire to higher standards.
9. Useful in settling disputes among shippers, transportation companies and buyers.
10. It facilitates marketing.
11. It permits buying at long range on an f. o. b. basis with assurance on the part of the buyer that he is getting the grade which he paid for without seeing the stock and encourages f. o. b. sales.
12. It lessens the chances for rejection at destination on account of a declining market or unscrupulous receiver.
13. It assists materially in the adjustment of railroad claims.
14. It establishes uniformity of marketing practices.
15. It classifies the merits of the stock and permits sales accordingly.
16. It is a powerful educational agency.
17. It places responsibility more accurately for deterioration of stock.
18. When compared with destination inspection, it shows clearly the party responsible for difference in the quality and condition of stock.

Uniform shipping point inspection of potatoes is in its infancy and each state will necessarily be under obligation to the potato growing industry to adjust this service to meet existing conditions.

It is essential that this work proceed on as nearly a uniform basis as possible in order to benefit the majority of growers, buyers, transportation companies and consumers in order to make the above mentioned beneficial points a commercial reality.

The first annual apple show at Spokane, brought out displays of 66 different varieties of apples, all grown in the Spokane Valley.

Westpine Boxes Stand The Test of Storage

Westpine boxes are made from selected air-dried lumber. They take nails without splitting—and they hold them. When placed in storage there is no shrinkage of the wood fibres. Renailing is not necessary.

Ship your apples in Westpine boxes. Your fruit will not be damaged by the weaving action of transportation or breakage that is the result of loosened nails. Your crop will reach the market in perfect condition. Your sales for next year will be made easier.

We will be glad to send you further information on important points to be considered in getting best results from apple boxes.

Box Bureau, Western Pine Manufacturers' Association
510 Yeon Building, Portland, Oregon



Spray Calculations

In figuring the amount of spray materials needed allow 200 gallons of dilute spray mixture for each acre of trees 9 to 12 years old. The average dilution of winter strength lime-sulfur is 12 to 100, hence to find out the gallons of stock solution needed multiply the number of acres by 24 to get an approximate estimate. For the delayed dormant spray multiply by 7. About four pounds of arsenate of lead per acre are needed and one should figure on making four applications a year. Thus, multiplying the acres by 16 will give a good estimate.

There are sure to be losses and regrets if you rely on inadequate spray equipment.

Pomological Society

The American Pomological Society has taken on new life and is seeking widespread support through new memberships. The fee is \$5 a year and, in return, extensive bulletin service, stimulation and co-ordination of fruit growing industry are promised. R. B. Cruickshank, Columbus, Ohio, is secretary-treasurer and memberships should be sent to him.

Heater service on apple shipments over the Union Pacific from Yakima was reduced \$7.48 per car on February 24.

Advertisers in *Better Fruit* are worthy of your business and we trust we are worthy of mention to them when you write.

Pointers on Stock Propagation

By E. J. WATSON

Yakima Washington

CORRECT propagation of nursery stock is of vital importance to, and in reality, the very foundation of the fruit industry, yet how careless many growers are in selecting the stock they buy! One cannot judge the true worth of nursery stock by its appearance, as there are many little details involved in its production which influence the quantity and quality of fruit the trees will produce.

There is a tremendous significance in blood, both in human beings and in animals. It is truly remarkable what has been accomplished in breeding up live-stock to a state of excellence. Just so it is possible to breed up nursery stock to an equally advanced state. It is an indisputable fact that too many nurserymen are not modern or up-to-date in methods relating to the propagation of nursery stock.

The growers are more to blame for existing conditions than the nurserymen, as they do not demand superior stock and many of them would not pay the difference in price between high grade and inferior stock.

In the production of high grade nursery stock there are three essentials to be considered. First come the location and climate in which it is raised. I would much prefer home grown stock, but if this is not

obtainable, I would recommend getting stock from a more rigorous climate than our own.

The second matter of importance is the origin. In propagating nursery stock one must remember that some varieties of trees are susceptible to almost every disease existing while others again are vigorous, hardy and immune from such ailments. As in livestock, so in fruit some crosses will not blend, the offspring being unsightly and tending to degeneracy rather than to invigoration.

The root is the primary factor of the tree for the vigor, longevity, productiveness and quality of fruit depend largely upon it. Many nurserymen have in the past resorted to vinegar plants for seed to develop the root. Some have not yet abandoned this practice. A parallel case is that of the farmer, who selling his marketable potatoes, plants the culls and expects to obtain good results. This happy-go-lucky method of propagating nursery stock, together with lack of knowledge and care of orchards in the growing stage is responsible for so many failures among growers. The saying that "like begets like" is not only an adage or a proverb; it is a stern reality.

THE third essential is that the land should be in a high state of cultivation,

with deep rich soil and good drainage. The size of tree desired and early maturity of the wood can be regulated by cultivation of the land and proper irrigation. Many nurserymen are trying to raise stock on impoverished land, entirely unfit for what was expected of it. Here, in order to get

After A Long Cold Winter

—the hungry gophers are a menace to your trees—Now is the time to get them, before they multiply.

Lee's Peerless Gopher Killer

—is the answer; a small amount on corn-cob, chip or other absorbent material placed in runs will kill them—**TRY IT!**

Write for our FREE CATALOG

—which lists our complete line of Seeds and Plants, Fertilizers, Poultry and Bee Supplies, Sprays and Sprayers.



Friend Sprayers

Five Sizes

High Pressure

Cause less trouble

Cost less to operate

Give real satisfaction

Distributed in the Northwest by

Hood River Spray Co.

Hood River, Oregon

trees of the required size, they use too much water and also use the water too late in the season to allow the trees to ripen thoroughly before fall frosts attack them. There are other reasons that would lead one to condemn nursery stock besides the fact of its being diseased, stunted, inbred, mongrel or because of poor workmanship in grafting and budding.

I say that growers should not seek bargain counter sales in nursery stock. Land is too valuable. Cost of labor not only warrants but demands the best stock that science and skill can produce.

If I were going to set out an orchard, say of Delicious apples, I would select the finest specimens of a vigorous, productive tree, say Arkansas Black, producing highly colored apples. I would select the finest specimens when the apples were fully matured. I would care for the seeds of these and at the proper season I would plant them. When the seedlings were one year old, I would select scions of a tree of equal quality of Delicious and graft into the root stocks of the seedlings. I firmly believe that this method would do away with so many unsightly variations and failures in orchard culture and that the results therefrom would justify the extra cost and labor involved.

In writing our advertisers please mention BETTER FRUIT.

Plants Quarantined

BY PROCLAMATION of the governor and the Oregon State Board of Horticulture a quarantine on strawberry plants has been made effective and will not be raised until danger of spread of root weevil is entirely allayed. No one may now sell strawberry plants in Oregon without first obtaining written credentials from the Board of Horticulture removing the quarantine on the plants to be sold.

When the quarantine was promulgated some time ago Charles A. Parks, president of the Board of Horticulture, said: "This action on the part of the board was absolutely necessary to protect and preserve the great strawberry industry of the state. The root weevil is a most dangerous pest and unless we take radical steps to prevent its spread within a few years there would be nothing left of this great industry."

Oregon residents who wish to sell strawberry plants need to get in touch with the nearest county fruit inspector or, if none is convenient, should communicate with the state Board of Horticulture.

Thurston County, Washington, is said to be supplying 100 carloads of split cedar grape stakes ordered by California growers. The stakes are cut two inches square and are pointed at one end. They are used to keep the grapevines off the ground.

Codling Moth

This destructive pest requires utmost vigilance. Use ORTHO DRY ARSENATE OF LEAD. Uniform in strength. Mixes perfectly, and stays in suspension a long time.

Write for Ortho Circular

CALIFORNIA SPRAY-CHEMICAL COMPANY, WATSONVILLE, CALIF.

Address Dept. F.



Northwest Orchard Ladders

"The Quality Line"

For Sale by
Leading Dealers Everywhere

Manufactured By

Northwest Fence and Wire Works
PORTLAND, OREGON

APPLE LABELS
by attracting attention
by compelling interest
by impressing brand name
by creating the desire

PLAY AN IMPORTANT PART IN
APPLE SALES

SCHMIDT LITHOGRAPH CO.
SEATTLE · LOS ANGELES · FRESNO
PORTLAND · SACRAMENTO · HONOLULU
MANILA
SAN FRANCISCO

Frost Protection

EVERY progressive orchardist knows that the critical time, when artificial heating of his tracts for a night or two may save him a valuable crop, is just ahead. The time is actually at hand when plans to provide protection against frosts must be complete. It cannot be anything but a sad experience to awaken some morning this spring to find one's crop sadly ruined while that of the neighbor across the fence has been saved by resort to artificial heating.

A good illustration is at hand. It is that of W. C. Stone, proprietor of the Squaw Butte orchard of 13-year-old Italian prunes, at Emmett, Idaho.

"On the morning of April 25, 1921, with the trees in full bloom," reports Mr. Stone, "the temperature dropped to 23 degrees at 2 a. m. Through the use of my orchard heaters, set 40 feet apart each way, I was enabled to save a full crop."

This experience would seem convincing enough to fruit growers of the Northwest that it pays well to be equipped with adequate orchard heating equipment.

Mr. Stone, it should be added, made use of 300 five-gallon cast iron Scheu orchard heaters. Because of the size and efficiency of these he used only 27 to the acre, which is far less than the number of older style heaters considered necessary.

The Department of Agriculture, through the Weather Bureau, has made detailed studies of orchard heating for frost protection and any readers not possessing a copy should send for Bulletin No. 1096.

Growing Apples in Willamette Valley

(Continued from page 11)

satisfactory production per tree.

Growers who are content to raise inferior fruit and put out an inferior pack should be prohibited by law. They can grow C grade apples and worse anywhere in the wide world, and they can grow them quite as cheaply as we can, and it does not cost them \$1 per box for freight and icing, to reach the market.

The eastern grower has his market at his door. We can not compete with the East in growing junk. We should, however, take into account the fact that we have no eastern competition when it comes to marketing extra fancy boxed apples.

Peach blight affects nursery trees as well as older trees. Nursery trees just being set out may well be sprayed with Bordeaux. Spray them where they are heeled in or set them loosely together for the spraying a few hours before planting. This will save spray and time.

▲ ▲ ▲

In writing advertisers kindly mention *Better Fruit*.



23,000,000 People Ready to Buy Your Fruit !

The great markets of New York supply nearly one-quarter of the entire population of the United States with their fruits. Greater New York alone has a population of over 6,000,000, and an average of 432,000 visitors come to New York daily.

Within a radius of 50 miles from New York there are 10,000,000 people, while there are 22,904,873 people within 200 miles of the City. New York not only supplies this great army of people with their fruits, but through these markets the people of the entire United States and Canada must get their supplies of certain fruits. Great quantities of fruits are also exported.

New Yorkers spend an average of \$1,200,000 in restaurants for dinner every night. The people of this great city consume every day an average of 400 cars of fruits and vegetables.

In one week in 1920 there were 1125 carloads of California fruits sold at auction. In addition, the auction sold cargoes of bananas, Spanish onions, Porto Rico citrus fruits, Italian lemons, Cuban fruits and Florida citrus fruits.

Think what a great market this is for your fruit! And think, too, what it would mean in better prices to have an average of 1200 buyers a week bidding for your fruit, as is done when it is sold at auction!

Through our auctions we can quickly dispose of your entire crop at the best market prices. And the cost of selling by this method is less than by other methods, leaving a bigger profit for you. Another thing, you can see that we return to you every cent your fruit brings by comparing the check we send you within 24 hours after sale with the prices printed in the *New York Daily Fruit Reporter*. No other method gives this publicity.

Our large financial resources and twenty-six years' experience is your guarantee that all shipments sent to us will be handled fairly and expertly.

Investigate our proposition before signing up for your season's output. There is no obligation. Write today.

The Fruit Auction Co.

Established 1896

202-208 Franklin Street, New York City

Twenty to 30 minutes of drying is usually sufficient to make Bordeaux stick to the trees for months, even in the rainiest weather, tests by the Oregon Agricultural College Experiment Station have shown. Only actual rain should stop the orchardist from spraying, says this report, as the mere prospect of rain need not interfere. The station, incidentally, now has available for distribution new and improved instructions for making Bordeaux by adding sugar, to prevent decomposition of the spray.

To set a tree exactly where the stake was, cut a notch in the center of a board about three feet long, set the notch over the stake, set a stake at each end of the board, remove the board, dig the hole, replace the board, and set the tree in its notch.

Here is my dollar for your \$1000 worth knowledge.—Ed. G. Rose, Wenatchee, Wash.

Spraying Roses

IF BLACK spot appeared on the leaves of your rose bushes last year, and the leaves dropped off before the cold weather, now is the time to begin treating them for this year. This disease of the rose bush is known as "black spot" and is caused by a fungus. Besides causing the leaves to drop too soon, it may cause the buds to begin opening again in the fall, with the result that the bloom for the following year is much lessened.

Black spot grows on the leaves in the summer and then stays over in the fallen leaves on the ground during the winter, ready to attack again in the spring. It may be controlled by burning all the fallen leaves late in the fall or early in the spring, and then spraying the bushes just as the leaf buds open.

There are three sprays which may be used, as follows: Commercial lime-sulfur one part to fifty parts of water, or Bordeaux mixture, in the proportions of 5-5-50; or 15 gallons of water, 2 ounces of copper carbonate and one pint of strong ammonia water.

Another method is to dust the bush with a mixture of 90 parts of finely ground sulfur and 10 parts powdered arsenate of lead.

Spraying must begin as the leaf buds are opening and continue at intervals of ten to twelve days, depending on how much rain has fallen.

Lewis Goes East

Professor C. I. Lewis, formerly in charge of the horticultural department of Oregon Agricultural College and for more than two years assistant manager of the Oregon Growers' Co-Operative Association, has taken the position of managing editor of the *American Fruit Grower*, with headquarters in Chicago. In his various capacities with the college and association and through aggressive activities in all organizations related to the fruit industry of the Northwest he has left a record for constructive work. The post to which he goes has become his largely because of this record.

MEANS TO SUCCESS

Salem, Oregon
March 9, 1922

BETTER FRUIT Publishing Co.,
Portland, Oregon.

GENTLEMEN: *The enclosed subscription is for one of our clients (an ex-service man) who bought a fruit farm through our agency. We are contemplating giving a one-year subscription to BETTER FRUIT to every ex-service man who buys a fruit farm through us, as a means to help them to make a success of their undertaking. We believe we can help them in no better way.*

RADCLIFF & WARING
Real Estate

BETTER FRUIT

Figure Your Profit In Apples

Between big, perfect, sound apples—and knotted, dwarfed, unmarketable fruit the kind caused by aphid injury.

By the use of 8 cents to 12 cents worth of Black Leaf 40 Nicotine Sulphate per tree, you can control Aphid, Thrips, Leaf Hopper and other soft-bodied sucking insects.

Just picture the difference in your own orchard between a yield of sound fruit and a crop of knotted and dwarfed "aphid apples."

Why, a mere handful of these culls will cost you more than the quantity of Black Leaf 40 required per tree.

BLACK LEAF 40

Nicotine Sulphate

Black Leaf 40 has for many years been the "true and tried" protector of the crops of the progressive growers of the United States and Canada against these insect pests that are so destructive to your orchard profits.

Send for copies of complete spray chart leaflet and bulletins, with name of nearest Black Leaf 40 dealer.

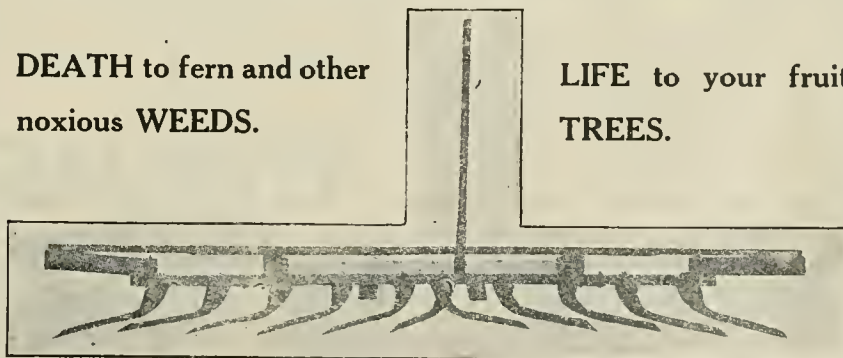
Tobacco By-Products & Chemical Corporation

Incorporated
LOUISVILLE, KENTUCKY

THE KIMBALL CULTIVATOR

DEATH to fern and other
noxious WEEDS.

LIFE to your fruit
TREES.



MOISTURE is absolutely necessary to wood growth and fruit production. Without adequate moisture in your soil, fertilizers will not become soluble, hence will not operate when you need them. Too much irrigation is admittedly dangerous.

Your KIMBALL will hold the natural moisture in your soil by forming a perfect mulch, eradicating weeds at the same time. After your spring plowing and discing the KIMBALL is the only tool you need through the balance of the season.

W. A. JOHNSTON, Mfg.

The Dalles

Oregon

Cherry Fruit-Sawfly And Its Control

(Continued from page 7)

and results tabulated on the accompanying table.

Referring to the table, it will be noted that the best control was secured with a

successfully controlled by the application of a contact spray (nicotine sulfate), given at the time the blossoms are opening. Arsenate of lead has not proven a satisfactory remedy against this insect. Dusting with Nicodust is thought to be a worthwhile treatment. Destruction of wild plums and willows in the vicinity of infested orchards is also recommended.

Table Showing Results of Sprays for Control of Cherry Fruit Sawfly

Block	Date Application	Material and Type of Spray	Dilution	Per Cent Infestation	Per Cent Control
1	March 6	Arsenate Lead (Rex) as Blossoms opened	2 lbs. to 100 gals	66 2/3	33 1/3
2		Unsprayed		100	0
3	March 10	Arsenate Lead as Blossoms Opened	2 lbs. to 100 gals.	17	83
	March 25	Arsenate Lead as Petals were falling	Same		
4		Unsprayed		100	0
5	March 25	Arsenate Lead as Petals were falling	2 lbs. to 100 gals.	33	67
6	March 10	Miscible Oil (Rex 35) plus Black Leaf 40, as Blossoms Opened	2 gals. plus 1/2 pint 100 gals.	4	96
7	March 7	Rex Lime Sulfur, plus Black Leaf 40 as Blossoms opened	1 in 12, plus 1/2 pint 100 gals.	3.5	96.5
8	March 25	Arsenate Lead as Petals were falling	2 lbs. to 100 gals.	85	15
	April 5	Same as Above	Same		
9	March 25	Same as Above	Same	56	44

contact spray, i. e., Nicotine sulfate (Black Leaf 40) in combination with either lime-sulfur or a miscible oil, (Blocks VI and VII). Noting the date of application of this spray (March 7-10), it will be remembered that the sluggish adult sawflies are on the trees at this time. Being naturally slow moving, they are easily killed by the powerful contact spray.

The contact insecticide, applied at the time the petals were opening, gave much better control than did the stomach poison treatment, (arsenate of lead) which Mr. O'Gara recommended. Lead arsenate applied as the blossoms are opening, when the petals were falling, and again a week later, produced inferior control to the contact sprays. In other words, at no time did even three sprayings with the stomach poison give as good results as did the one treatment with the contact spray applied as the blossoms were opening.

The writer believes that dusting with Nicodust, (5 per cent) would satisfactorily control this pest, thus making the remedy cheaper and quicker to apply. This point will be tested this season.

Another factor in the economic control of the cherry fruit sawfly was mentioned to the writer by Professor W. T. Clarke, namely the destruction of alternate host plants such as wild plums and willows in the neighborhood of orchards. It has been a common observation that this pest occurs on trees adjacent to creek beds where there is considerable wild growth of such plants.

CONCLUSIONS—The results of this work show that the cherry fruit sawfly can be

Some may question the advisability of a system of pruning which weakens the tree. As a rule it would not be necessary to prune the weaker trees as they usually are heavy bearers. Generally it is only trees with too much vigor that are tardy or shy bearers. Many varieties, especially in western Oregon and Washington, grow entirely too rampant and brushy, making them unfruitful and hard to manage. It is much better to have smaller trees filled with fruit than large ones filled with brush.

MYERS HONOR-BILT SPRAY PUMPS

(11)

FOR quick, thorough spraying Myers Spray Pumps are unequalled. Hand Pumps, with easy operating cog-gear handle—Power Pumps with automatic pressure control—give powerful, penetrating spray that reaches every leaf and blossom. The Myers line includes Pumps for Every Purpose, Hay Tools and Door Hangers. Ask your dealer or write us.

TAKE OFF FOR THE MYERS PUMPS FOR EVERY PURPOSE HAY TOOLS & DOOR HANGERS

The F. E. Myers & Brother Co. Church St. Ashland, Ohio

Free Booklet on Request

Pacific Northwest Distributors

Mitchell
SAWYER & STAVELAND

Spokane, Washington Portland, Oregon
Buy From the Local Mitchell Dealer

Lime Exploited

THE STATE Department of Agriculture of California recently gave warning to the effect that it has frequently come upon false and misleading advertisements of companies who are exploiting the sale of agricultural lime under the guise of fertilizer. There are two ways in which deception occurs: First, the word "fertilizer" is used as a part of the company name, and second, the substance advertised is described as a material containing phosphoric acid and potash, two commonly recognized plant foods.

The California chemistry experts have many analyses of these so-called fertilizers and in no case has any appreciable amount of either phosphoric acid or potash been found. In one instance the company's published analysis of its product shows the following: alkalis, none; sulfuric anhydride, none; and phosphoric anhydride, five hundredths. This analysis is printed on one side of the sack, while on the other side there is printed in prominent letters, the words: "phosphoric acid," "sulfur," and "potassium," although the commercial value of five hundredths of one per cent of phosphoric acid would not be more than five or six cents, and the analysis would indicate not even a trace of either potash or sulfur.

"The Department," says the report, protests against the exploitation of lime and marl under such false pretenses, and hopes that at the next session of the legislature some action will be taken to strengthen the present fertilizer law in this respect.

"On the other hand, the Department does not wish to discourage the sale of any substance which is of real benefit to the agricultural industry, but it feels that lime should be sold as lime, and gypsum as gypsum and each sold upon its own merits and not advertised or labelled so as to give the buyer the impression that he is obtaining not only lime or gypsum, but in addition an appreciable quantity of three commonly recognized plant foods, nitrogen, phosphoric acid, and potash, which determine the commercial value of fertilizer."

GROWERS in New York state have this year made experiments in packing apples to compete with the boxed apples of the Northwest. One of the first test shipments consisted of three carloads of the best Baldwins, packed in the Genesee River valley in waterproof fibre boxes holding 40 pounds. These boxes sold on arrival in New York City at \$2.25 a box. Two carloads were put into storage to test the practicability of fibre boxes under storage conditions.

Reports from the West Okanogan Valley, in Washington, indicate that 1000 acres of new orchard will be planted there this spring. Most of the plantings will be to commercial apples.

You do a double favor by mentioning BETTER FRUIT when answering advertisements you find here.

Pests of Strawberry Industry

(Continued from page 6)

SPITTLE BEETLE—Spittle beetles are not beetles at all, but a form of leaf hopper. They were very prevalent in this district last year. The young hoppers appear in the spring and cover themselves with a mass of froth, this is secreted by the insect and is pumped full of air bubbles by placing the tip of the abdomen above the mass and drawing the air down. This material serves as a protection for the insect while it molts its skins for about four or five molts. The last time it is full grown and has developed wings. It then leaves the spittle and flies and hops about.

The adult insect is less than a half-inch long, narrow, with bright green wings folded along the sides. These insects although conspicuous are not serious unless they should be present in enormous numbers. There is no remedy except to hand pick them and destroy them while the insects are young.

SLUGS—Strawberries are sometimes bothered with slugs or snails getting on the berries and eating them. Slugs live and breed generally in weeds and trash next to cultivated fields and travel out from such places in search of food. The cleaning up of such places will help much in the control of them. When abundant in the field and eating the fruit, there is one remedy that is very satisfactory. Take one part, by weight, of calcium arsenate (this is much more powerful than lead arsenate) and sixteen parts, by weight, of chopped green stuff, such as clover, kale, lettuce, wild mustard, or whatever can be secured. Mix up the green stuff and work the one part of calcium arsenate into it. Then sprinkle this green stuff about the patch after sunset. The slugs will eat this material in preference to the fruit and will die from eating it. This method was developed by the Oregon experiment station after several years of testing many different things.

FLEA BEETLES—Flea beetles are the small black jumping beetles that eat holes in the leaves. The beetles emerge from hibernation in early spring and feed voraciously on the tender foliage of the strawberry. The injury to strawberry plants is sometimes very severe. The beetles appear in immense numbers and completely riddle the leaves. They may be kept off, when abundant, by spraying the leaves with Bordeaux mixture 5-5-50, plus lead arsenate, one pound of the powder form to fifty gallons of the spray. This should be put on before blooming and after harvest.

LARGE WHITE GRUBS—Often large white grubs an inch long or so are quite injurious in strawberry fields, eating the plants entirely off. White grubs are most abundant in land which has been for some time in sod, or has been occupied for some

time by old strawberry beds. Much of the loss occasioned by white grubs can be avoided by adopting the one-crop system in strawberry culture and alternating with some crop more or less immune, such as beans or peas.

NEMATODES—Nematodes are very small eelworms. They live in the ground and get into many different kinds of plants. One of the ways they affect plants is to produce upon their roots, galls or swellings. In the case of the strawberry they produce distinct and noticeable symptoms in the form of swellings or galls in any portions of the stems, leaf petioles or runners and characteristic distortions of the leaflets, which become crinkled, misshapen and dwarfed in size.

The nematodes are found within the

swellings. There are several generations in a season.

There is no remedy known except to take up the affected plants or burn them. Every grower is warned to be on the lookout for this pest and report on it to prevent its spread.

Oregon is advocating planting non-susceptible plants for two or three years, so as to starve out the pest. Practice clean cultivation to prevent volunteer plants or weeds from harboring the pest. Cabbage, sunflower, lettuce, celery, corn, tomatoes and asparagus may be used as crops for rotations. The Department of Agriculture and the Idaho Agricultural Experiment Station are now carrying on experiments to control this pest and very likely improved and additional control measures will result.

For your Dormant Spray

DORMOIL

Especially for Leaf Roller, Scale, Aphis, Blister Mite, Red Spider, etc.

DORMOIL has been used with remarkable success in Oregon, Washington and Montana. Write for details

HOOD RIVER SPRAY CO.

Hood River, Oregon

POTASH PROTECTS from frost

AFTER the recent freeze, it was noted that where a fertilizer high in Potash had been used, the damage to the fruit was much less severe.

Fruit buds on trees fed with a well balanced fertilizer containing 10 per cent of Potash also resist frost better.

These facts taken in connection with the improvement in flavor, yield, shipping and keeping quality of fruits and vegetables are further proof that

POTASH PAYS

SOIL & CROP SERVICE, POTASH SYNDICATE

H. A. HUSTON, Manager

42 Broadway

New York

Technique and Tools in Pruning

PRUNING at different times through the growing season has different effects. In early summer when the vitality of the tree is not taxed by the maturing of fruit, the weakening effects are perceptibly less or more easily overcome. If done quite late when the leaves have become somewhat inactive the effects are nearly the same as winter pruning except that slightly more food material is removed.

Authorities disagree as to proper time to summer prune. Some hold that it must be done just previous to the differentiation of the leaf and blossom buds. Just when this occurs we do not know. According to recent observations of the Virginia station, it would probably be about the middle of June. Others advocate pruning at a specific time; just at the close of the vigorous summer's growth while the tree is beginning to store up reserve food, and develop buds for the coming season's growth. The date, depends upon the location, variety, methods of culture and season, varying from July until September.

Pruning at any time during the active growing season will have the desired weakening effect. The former possibly may give more immediate results by inducing the formation of fruit buds for the following year. The later pruning when the plant is more or less exhausted from the production of fruit and usually poorer moisture conditions will have a greater weakening effect.

On extremely vigorous growers, or when much thinning out and removing of large branches is required, two summer prunings would be advisable. Tip back just previous to the formation of fruit buds, and thin out and remove large branches just at the close of the vigorous growing season. It takes nerve and decision to remove large branches in the summer when the fruit is on, but the effect on the tree is more satisfactory. The weakening effect more or less counteracts the stimulating effect and is less conducive to water sprouts and an unbalanced condition of the tree.

Pruning Tools—Good tools encourage good work. It is not necessary to have a large variety. Too many tools are cumbersome.

During the first two years of the tree's development the pruning is best done with a pair of small pruning shears. However, the orchardist should always possess a good sharp pocket knife.

Short-handled pruning shears will suffice for the third and fourth years. It is the handiest, strongest and easiest cutting tool for pruning under nine feet in height. It readily cuts branches one and one half inches in diameter.

From the fifth year on practically all the pruning is done with short handled pruning shears and long handled pruners, six to twelve feet in length, according to the height of the tree. With the long

handled pruners all topping back and thinning the top can be done from the ground. This gives the pruner a chance to compare one side of the tree with the other and hence he can make a more shapely tree. It is also a more rapid way than moving a ladder about the tree and using short-handled pruning shears.

The ladder and saw are seldom needed in an orchard receiving annual prunings, but are most useful tools in the renovating of old orchards.

Gathering Up Prunings—Where the prunings are not too large a common hay rake may be used in bunching them.

A low sled with a top ten-foot square is very satisfactory in removing the brush from the orchard. It is easy to load and unload and is convenient under and among the trees.

To set fire to a pile of green prunings and make it burn is quite a difficult matter. Start a good fire with old rails or cord wood, then pile the prunings gradually as they are taken from the orchard.

New Packing Stand

A STAND for packing fruit has been invented by Charles A. Brand, of Roseburg, Oregon. The device includes a tilting rack on which the boxes in which the fruit is packed is supported in a slanting position inclined toward the operator. In this position the packer can more conveniently fill the boxes with fruit.

The device enables the packer to eliminate lifting as with a simple touch of the hand the filled box can be tilted back to a horizontal position and slid off the horizontal rolls to the discharge rack and instantly start the packing of the next box. It makes it possible for women, who do most of the fruit packing, to attend to the entire work without calling for a man attendant to lift the boxes out of the way.

Claim is made for the state of Wisconsin that practically one-half the entire pack of peas in the nation is put up by Badger state canners. According to the Wisconsin College of Agriculture, a total of 4,063,000 cases of peas were canned in the state this season. The total pack of the United States is given as 8,207,000 cases.

According to Washington state officials fruit growers of the state last season spent \$1,500,000 for spray materials and double that sum for applications of the sprays.

Prune growers of Oregon are estimated to have spent \$250,000 last season for Italian and Petite trees.

It is best to treat seed potatoes with corrosive sublimate while they are still dormant.



ALBATROSS BRANDS

Prevent

the "blotch" or "burn" of the
spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in



Note the "blotch" or "burn" of the lead on this apple

spots or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple is thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

ALBATROSS "SPRAY SPREAD"

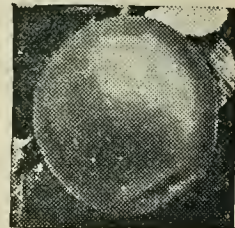
(Calcium Caseinate Compound)

The Original and Genuine Spray Spreader

Quality Features:

1. Very finely ground—always uniform.
2. Quickly Soluble.
3. No lost time.
4. Protects fruit with uniform coating.
5. Does not injure foliage.
6. Recommended by experts.
7. Guaranteed by manufacturers.

Directions sent with each order



Note the uniform, adhering film on this apple

PACKAGES AND PRICES

200 lb. Bbl.	Boxes	1 lb. Pkgs.
20c lb.	22c lb.	25c lb.

Freight prepaid to Northwest points.

NOTE: If you use Casein, specify ALBATROSS Superfine. Also call for Albatross Dry Bordeaux.

General Basic Products Co., Sole Manufacturers, 4796 E. Marginal Way, Seattle, U. S. A. Dealers: Address us for attractive sales proposition.

Long Growing Season

GOVERNMENT weather bureau records show that valley sections west of the mountains, in Oregon and Washington, have growing seasons running from 208 to 261 days. For the easterner who marvels at the wide variety of crops so successfully grown in these sections, this fact is one of the simple explanations. The statistics, it should be noted, are the average for 20 years, and not just for a few favorable seasons.

Here is a vitally important consideration for the man who is comparing advantages of our fruit sections with those of other states and regions. The growing season, it is to be understood, is measured from killing frost to killing frost.

1921 Apple Costs

INFORMATIVE figures on the 1921 apple crop have been compiled by the Wenatchee Valley Traffic Association, showing an average yield for that district of 348 boxes per acre and an average production cost per box of \$1.52. It was said that costs compiled by bankers and others were slightly lower. The association figures can be taken as nearly correct, however, as they were carefully worked out, with every factor included.

Part of the association's report is here quoted:

"Production costs which do not vary appreciably according to the yield per acre amounted to \$336.75 per acre during 1921. Production costs which vary directly according to the yield per acre amounted to .5505c per box. Based upon a crop of 15,000 carloads, the average yield on the 32,250 acres of apples in the Wenatchee North Central District was 348 boxes per acre. Computed on this yield the average cost for the district was \$1.5182 per box.

"The estimated cost per box at different rates of yield for 1921 would be as follows:

Yield per acre	Cost per box
200	\$2.2342
300	1.6740
400	1.3923
500	1.2240
600	1.1117
700	1.0315
800	.9714
900	.9247
1000	.8872

"These costs have been very effectively substantiated in the whole by actual cost records turned in by growers for producing the 1921 crop. In nearly every instance costs thus turned in have been a few cents per box higher than the figures herewith presented."

To Kill Currant Worms

Injury by currant and gooseberry maggots, small white worms that tunnel inside the fruit, can be largely prevented by improved cultural practices. The insect spends practically 11 months of the year in the first two inches of surface soil immediately under the bushes or in the area covered by dropping fruit. If this surface soil is stirred frequently in the early spring months many of them are brought to the surface, where they are destroyed by the weather or birds. In commercial plantings, where better cultural practices have been followed, damage by maggots has been reduced to a minimum.

▲ ▲ ▲

In California there is being tried out a new method of fumigation of nursery stock. This is accomplished by vacuum fumigators, which have the approval of the State Department of Agriculture.

Crown Gall, Its Causes and Cure

(Continued from page 8)

of the ground, very good results can be obtained by burying the injured parts in a mound of earth after the bridge grafting has been completed. This treatment partially excludes the air and aids in preventing undue drying out of the injured parts.

The other method of bridging a badly wounded area is by planting one or more young trees around the base of the tree, and grafting the tops into the trunk above the wound; small nails may be driven through the trees into the trunk to hold the parts firmly together.

The wounds incident to joining the tops of small trees to the trunk of the large one should be well covered with wax to prevent drying out.

This method has been employed with success for several years in pear and apple



Will they be dead when you get back?

THEY WILL if you spray with Hall's Nicotine Sulphate. Plant-lice, thrips and similar soft-bodied sucking insects can be wiped out by a systematic spraying with this powerful insecticide.

Authorities agree that Nicotine is the most effective contact poison known.

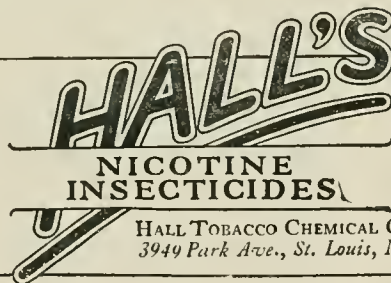
Hall's Nicotine Sulphate is guaranteed to contain 40% pure nicotine.

Being a vegetable extract it will not injure fruit or foliage.

And—made up as a spray its cost is only two cents a gallon.

Ten-pound tins—\$13.50 Two-pound tins—\$3.50 Half-pound tins—\$1.25.

Buy from your dealer. If he cannot supply you, order direct from us.



Hall's Tobacco Dust

For use where dusting is preferable to spraying.

Finely ground and guaranteed to contain a full 1% nicotine.

100-pound sack, \$4.50
2-pound drums .. .25



growing districts of the east and northwest.

To be effective, bridge grafting should be done in spring before growth starts, though sometimes it can be done after growth starts if dormant scions for that purpose can be secured.

PRACTICAL IN MAINE

Agricultural Experiment Station
Orno, Maine, Feb., 25, 1922

BETTER FRUIT,
Portland, Oregon.

GENTLEMEN: Permit me to congratulate you on the February number in particular. It is filled with practical things of interest to the practical orchardist, wherever he may be located.

Yours truly,
W. J. MORSE,
Director

Research on Sprays

ANNOUNCEMENT that will interest most of our readers has just been made by the California Central Creameries Company, to the effect that Ralph H. Smith, for four years in charge of the division of entomology of the Idaho Experiment Station, has been made head of the entomological research laboratories of the Creameries Company, manufacturers and distributors of Kayso, the combined casein spreader and adhesive for orchard sprays.

After graduating from the University of Kansas, Professor Smith served as instructor and also specialized in entomology and plant pathology at Oregon Agricultural College and the University of California. While at the head of the division of entomology at Idaho Experiment Station from May 1918 to March 1922, he carried on extended experiments in commercial orchards at Twin Falls, Idaho, to determine the practical value of spray spreaders in the control of insect pests. He also conducted investigations on the control of various pests including experiments on spraying methods for controlling the codling moth, the twig borer of peach and plum, orchard plant lice and spider mites.

The work on spreaders consisted of trying out different spreader substances under orchard conditions and ascertaining the influence each had in reducing loss caused by pests. He reported and conducted investigations on two new pests, including the red clover eelworm and the leaf-curl plum aphid. The leaf-curl plum aphid is the most important plant louse that affects plum trees in Idaho and other parts of the Northwest. It may be effectively controlled, he found, by adding nicotine-sulfate to the dormant lime-sulfur spray and applying the spray just before the fruit-buds open.

Smith also reported the occurrence of the European Red mite in the western part of the United States in 1919. Previous to this it was not known to exist excepting east of the Allegheny Mountains. He is author of a number of scientific papers and experiment station publications.

▲ ▲ ▲

THE FIRST carload of broccoli to be sent from the Umpqua Valley, Roseburg, was shipped March 23. The crop is estimated at 125 carloads.

▲ ▲ ▲

ORCHARDISTS of Hood River Valley will spend \$25,000 for new high-powered spray rigs this spring.

▲ ▲ ▲

AT A MEETING of the Oregon Co-Operative Growers' Association as Sheridan, Ore., H. E. Allen, H. G. Funk and G. W. Aaron were elected as the local advisory committee.

Marketing News of Interest

REPORTS from New York show that there are but moderate receipts of boxed apples. Shipments from Washington, Oregon and Idaho are decreasing. These states, however, are credited with nine-tenths of the current boxed shipments.

In the week ending March 18, extra fancy Delicious ruled firmer at \$3.25 to \$5.25; fancy brought \$3.80 to \$4.25; the best Rome \$2.75 to \$3.50; extra fancy large Winesaps and Spitzenburgs \$2.50 to \$4.25; fancy, \$2.50 to \$3.50; the most desirable Newtown Pippins, \$2.25 to \$3.35; choice, \$2 to \$2.90; the most attractive British Columbia Jonathans, \$2.25 to \$2.40 and the best McIntosh, \$2.75 to \$3 per box.

▲ ▲ ▲

THE PRUNE crop of Oregon and Washington is fast being cleaned up, as indicated in reports from the various packing and selling agencies. Earlier predictions that the crop would all be sold by summer were too conservative. Some

weeks ago the Oregon Growers' Co-Operative Association reported that all prunes in its southern Oregon plants had been shipped.

On March 8, M. J. Newhouse, manager of the Washington Growers' Packing Corporation reported that every prune of the 1921 crop in Clarke county, Wash., had been sold. The third dividend, amounting to about \$45,000 was paid, the growers having previously received \$172,000. There is still one payment to be made, but at present the growers have received 11½ cents on 20-30s and 8½ cents on 30-40s.

▲ ▲ ▲

PRUNES of the California Prune and Apricot Growers' Association are off the market and as a result price advances have been made by the Oregon Growers, ranging from 1 to 4 cents a pound. Demand is not heavy, but retains a fairly healthy tone and dwindling stocks do much toward stiffening quotations.

▲ ▲ ▲

MORE CARLOADS of boxed apples were shipped out of the state of Washington than from all other boxed apple states combined, according to federal statistics received by the state department of agriculture. Supervisor Charles L. Robinson of the horticultural division has compiled a statement on commercial fruit raised in Washington which shows that there were 32,410 carloads of commercial apples raised last season in this state, representing a minimum value of \$39,259,319. Less than 3,000 carloads probably were shipped within the state for domestic use.

The entire output of commercial fruit was 40,742 cars, valued at \$48,192,038, showing that apples represent about 80 per cent of the fruit industry in Washington.

The various fruits outside of apples and their respective values, as estimated by Supervisor Robinson's report, are: Pears, \$2,525,500; peaches, \$1,583,930; grapes, \$112,000; apricots, \$97,000; cherries, \$567,000.

The prune crop was low last season, due to failures in Clarke county, the crop of fresh prunes being worth about \$680,000 and the dried prunes \$366,000.

The total berry crop is valued at \$2,973,000, divided as follows: Strawberries, \$1,243,000; loganberries, \$198,000; raspberries, \$723,000; blackberries, \$681,000; cranberries, \$68,000, and mixed berries, \$60,000.

The berry acreage last season, including only that land actually producing, was: Strawberries, 6013 acres; raspberries, 3158 acres; loganberries, 1375 acres; blackberries, 1728 acres; currants, 453 acres; gooseberries, 467 acres and cranberries, 600 acres.

▲ ▲ ▲

A RECENT estimate by Manager H. G. Cockendall, California Prune and Apricot Growers, Inc., placed the unsold portion of the 1921 prune crop of the organization's members at 10,000 tons. The total crop was estimated by the government as 90,000 tons. At the time of the report the association had paid to members \$7,297,000. The total paid for the 1920 crop was \$10,612,125.

▲ ▲ ▲

DUCKWALL BROS., report having purchased 120 cars of apples from Hood River growers last season and have sold all but one carload. The average net price to the grower is given

**WRITE
RIGHT
NOW!**

For our Book "DEHYDRATION OF FOOD PRODUCTS" —It's Free. There is a best way to dry APPLES, PRUNES, etc.

Stephenson-Schaller Co.
ENGINEERS - MANUFACTURERS
SAN FRANCISCO

We Build Best Plants for Dehydration of Fruits and Vegetables at Low Cost

Address 312 Liberty Bank Building, San Francisco

Yakima and Columbia River Nursery Co.

Growers of Choice

**FRUIT TREES
SMALL FRUITS and
ORNAMENTALS**

Yakima, Washington

"Yakima Grown" is the best guarantee.

PLANTING

Salem Nursery Co.

**FRUIT, NUT AND
ORNAMENTAL
TREES**

**WILL BRING YOU
SATISFACTION
NOW IS THE TIME
TO ORDER**

Write

Salem Nursery Co.

428 Oregon Bldg. SALEM, OREGON

Additional Salesmen Wanted

FRUIT TREES

We are extensive growers of fruit trees adapted to the Northwest.

GET OUR PRICES

**COLUMBIA NURSERY
COMPANY**

1490 Union Ave., No. Portland, Ore.

as \$1.664 on the packed apples and as \$1.513 on all apples shipped, this including those jumble packed and unclassified.

▲ ▲ ▲

THE Sebastopol Apple Growers' Union of California last season sold 434,761 boxes for \$803,434. About 20 per cent more apples were marketed by the growers outside of the union. The season's output was slightly larger than in 1920 and the returns about \$65,000 less.

LESS THAN 10 per cent of the 1921 fruit pack of Salem canneries remains in hands of the packers, according to late estimates. The pack of the year, said to have been the largest in the history of Marion county, is placed at 450,000 cases. Salem boasts that its pack was one-sixth that of the entire Northwest. The pack of the state of Oregon is estimated to have been 1,304,548 cases.

▲ ▲ ▲

HOOD RIVER interests report that more than one-half of the 500,000 boxes of apples shipped by water to England this season from Portland and Seattle were supplied by the Apple Growers' Association and Dan Wuille & Co. The association's direct tonnage amounted to 150,000 boxes, while that of Dan Wuille & Co., aggregated 124,000 boxes, assembled from Hood River, White Salmon and Underwood, Wash. In addition to these the Oregon Growers' Co-Operative Association supplied considerable tonnage.

▲ ▲ ▲

LOGANBERRY pool No. 1 for dried logans has been closed by the Willamette Valley Prune Association, on the basis of 27.17 cents a pound. This is on the basis of 4 3/4 to 5 cents a pound for the fresh fruit, according to T. Jenks, manager of the association.

▲ ▲ ▲

FOUR CARLOADS of prunes, valued at \$32,000 and produced in one orchard, were recently shipped from Eugene by the Oregon Co-Operative Growers' Association. They were sent by rail to New York, whence they will be shipped to Europe. The prunes were grown and evaporated on the 140-acre orchard of Dr. L. D. Scarborough, at Cresswell, Ore.

▲ ▲ ▲

OREGON

AT ROSEBURG last month the Umpqua Dite Prune Company was organized to develop dite prune orchards. The first experiments are to be made on 320 acres of land acquired in the Upper Umpqua Valley. R. M. Knight, successful prune grower of Day's Creek, has been chosen vice-president and will serve as superintendent. G. Archer Lindsay of Portland is president; M. McDonald, Orenco, is secretary-treasurer and the other directors are R. A. Mitchell, Portland, and George Neuner, Roseburg.

▲ ▲ ▲

AT THE ANNUAL meeting of the Mosier Fruit Growers' Association stockholders, R. D. Chatfield was unanimously re-elected manager. He has served in this capacity for 10 years. The directorate for the ensuing year will be this: Dr. C. A. Macrum, president; J. P. Carrol, secretary; J. P. Ross and C. A. Macargar. The Mosier Valley bank continues as treasurer. The organization last season shipped about 300 cars of fruit.

▲ ▲ ▲

TOMATO GROWERS of the Milton-Freewater district have organized the Walla Walla Valley Co-Operative Tomato Growers' Association. They count on producing 75,000 boxes of tomatoes this season, and, because of the early season, expect to receive at least \$1 a box. The officers are: L. A. Rineman, president; Charles Waldon, secretary-treasurer; F. E. Magonier, manager; O. K. Goodman, Thomas Rogers and F. J. McKinney, directors.

▲ ▲ ▲

ANNOUNCEMENT at Lebanon that the cannery of the Oregon Canning Company will be operated this year has occasioned gratification on the part of the growers of berries and small fruits in the Santiam River bottom section. There are large acreages of strawberries, raspberries and small fruits and the growers sustained severe loss last year through lack of a market. The cannery is splendidly equipped and employs about 100 persons to operate it near capacity.

GRASELLI

WHY SHOULD Our 83-Year Prestige and Leadership Make Any Difference to You?

Because you KNOW that in the long run only Quality and Goodness endure. That is the only reason under the sun we have reached our 83rd year of reputation and experience in the chemical industry. Other things may make for temporary fame, but nothing but sheer Quality produces it for a span of over eighty years. That's the reason we are known to produce only the highest grade Insecticides and Fungicides.

Spray with GRASELLI Arsenate of Lead, Calcium Arsenate, Lime Sulphur Solution or Bordeaux Mixture (following our printed instructions) and be certain of results.

Established 1839

THE GRASELLI CHEMICAL CO., CLEVELAND

THE LACREOLE Canning Company has been organized at Dallas and expects to be ready to handle the crops of berries and small fruits there this season. The officers are: W. V. Fuller, president; C. B. Sunberg, vice-president; D. H. Cheney, secretary-treasurer.

▲ ▲ ▲

S. H. VAN TRUMP, Marion County fruit inspector, has been kept very busy in recent weeks inspecting strawberry plants in both Marion and Polk counties. The inspection is for strawberry root weevil, and must be made before the plants may be shipped by mail, express or freight.

▲ ▲ ▲

AFTER THIS summer Dufur will no longer boast of having the largest apple orchard in the world. Plans have been laid and the contract let for the clearing of 1800 acres of the Dufur Orchard Company tract. This land is to be cleared by fall and will be sold to wheat growers. The company is in the hands of a receiver and a court order has authorized the move for removing the trees from what is known as the east half of the big orchard, which had not yet become really productive.

▲ ▲ ▲

GROWERS who marketed their blackberries through the Eugene Fruit Growers' Association last year received 5 3/4 cents a pound for their crops, it was announced at the closing of the pool last month, by J. O. Holt, manager. The association, he said, handled 1,228,264 pounds of blackberries.

▲ ▲ ▲

J. M. SEARS, who recently came from Moline, Ill., has purchased George Siefarth's prune orchard at Polk Station, near Dallas. The tract is in the best producing orchard belt in Polk County.

▲ ▲ ▲

THE NORTH MARION BERRY GROWERS' Association has disbanded and merged into the Woodburn Fruit Growers' Co-Operative Association which now has 77 members and 415 acres of berries signed up.

▲ ▲ ▲

R. T. WILSON has purchased two 10-acre fruit tracts in Garden Valley, near Roseburg, and announces that he will plant them to walnuts.

▲ ▲ ▲

HOOD RIVER fruit men are making arrangements to entertain a big group of prominent eastern apple buyers who plan to visit the Northwest in July. The Apple Growers' Association and Commercial Club are at work on the plans. The committee is composed of P. F. Clark, A. E. Woolpert, C. H. Castner, Fielding S. Kelly and John C. Duckwall.

Treat Your Soil with Toro Brand Agricultural Sulphur



Improves alkali soil, transforms latent potash and phosphates into available plant foods.

Prevents wire worms, eel-worms or nematodes, smutty grain, ants and potato scab. 220 lbs. per acre has increased crops up to 500%.

For dry dusting, use "ANCHOR" Brand Velvet Flowers of Sulphur.

For Lime Sulphur Solution, use DIAMOND "S" Brand Refined Flour Sulphur. Sold by leading dealers.

Write for circulars Nos. 6, 8, and 10, price-list and samples. State for what purpose sulphur is to be used.

SAN FRANCISCO SULPHUR CO.
624 California St. San Francisco, Cal.

Apples, Pears, Peaches Potatoes, Onions

and all kinds of Fruit and Produce Bought for Cash..

Address us as to what you have to offer.

WILLEY FRUIT CO., Inc.

215-217 Washington St. Portland, Ore.

THE BEST IN TREES AND SHRUBBERY BOTH FRUITS AND ORNAMENT

E. A. Bennet Nursery Co.

1030 Chemeketa Street
SALEM, OREGON

Rubber Stamps for Fruit Boxes

Write for Sample and Prices to

ROGERS COMPANY
Gerlinger Bldg. PORTLAND, ORE.

WASHINGTON

THE North Puyallup Fruit Cannery, it is announced, has been leased to Frank Collinson, of the Star-Collinson Packing Company of Portland, Ore. The annual capacity of the plant is about 100,000 cases and it will be run at capacity this season. Berries and rhubarb constitute most of the pack. H. A. Baker was formerly lessee of the plant.

THE OMAK FRUIT COMPANY has taken over the property of the Omak Fruit Growers, Inc., a co-operative organization which had handled most of the apples grown around Omak. Incorporators of the new company are: Martin Miller, Dr. E. E. Copple, George W. Lee, and F. C. Paine. The property consists of three warehouses capable of handling 400 cars of apples a season, a spur track and 9½ acres of land.

THE OKANOGAN Produce Company has been incorporated by James T. Kilpatrick, Charles Ostenberg and B. Garigen, to take over the warehouse business of the Farmers' Warehouse Association at Okanogan, which recently closed a retail store and warehouse business. Kilpatrick was formerly manager for the farmers.

THE Walla Walla Valley Prune Growers' Co-Operative Association has been organized, with W. R. Parvin as manager and approximately 400 members, who count on shipping between 600 and 800 cars of prunes this season.

J. W. YOUNG, manager of the cannery at Mossyrock, reports that he expects to plant 2½ acres of Cuthbert raspberries and a like acreage of logans this season. Eventually he expects to have 20 acres in cane berries.

THE APPLE crop of the Palouse Corporation at Waverly, Fairfield and Four Lakes, near Spokane, sold for \$101,000 and paid expenses for the season of 1921, according to H. T. Hubbard, the receiver. The Earl Fruit Company foreclosed on the property and has been providing the funds necessary to finance it.

FRUIT GROWERS at Meyers Falls, 75 miles north of Spokane, at a recent meeting decided to form a local organization and take over the warehouse which belonged to the now defunct Spokane Fruit Growers' Association.

FOR THE first time in history the executive committee of the International Apple Growers' Association will meet in the Northwest, word having been sent to A. R. Rule, of the Northwestern Fruit Exchange, that the committee will convene July 26, in Seattle.

THROUGH a friendly suit, plans for re-organization of affairs of the Puyallup & Sumner Fruit Growers' Canning Company have been set in motion. William N. May has been appointed receiver, to direct the reorganization task.

DR. F. D. HEALD of the State College has issued warning to potato growers of the state against a new disease known as skin-spot. He says the disease occurs in storing. It came from Europe and is now present in Canada. It was found on potatoes shipped into Spokane from British Columbia.

A NEW PRICE for land in the Buena district, Yakima Valley, was established recently in the sale of 27 acres of bearing orchard by E. S. Smith, George W. Pearson and W. E. Humphrey, to Jacob and Manuel Matson for \$20,875.

AT THE annual meeting of the Yakima County Horticultural Union, the valley's largest shipper of fruit, steps were taken to increase the capital stock to \$500,000 and to rebuild the Selah

warehouse. During the past season the union received on sales \$2,354,278 and turned over to members \$2,228,311.

GRAYS HARBOR County potato growers are laying careful plans this season to eradicate rhizoctonia disease, which has been the greatest enemy of the industry in seasons past. A series

of control demonstrations, featuring the corrosive sublimate treatment, has been arranged by Professor Zundel of the State College.

EARLY LAST month a petition was filed in superior court at Wenatchee asking that a receiver be appointed for the Manson Fruit Growers' Co-Operative Association.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

WE ARE

Specialists in Apples and Pears

CABLE ADDRESS: BOTANIZING, LONDON

Codes: A. B. C. 5th Edition and Modern Economy

Notice to Subscribers!

BETTER FRUIT has adopted a policy which will eliminate in the future any "bargain offers" or premiums to subscribers.

In doing so, BETTER FRUIT has made it possible for you to receive America's premier fruit journal at the lowest possible cost, taking into consideration the fact that quality will not be lowered a whit.

We have been told many times that timely information contained in an issue of BETTER FRUIT has made a fruit grower the cost of a life subscription to the magazine—and then some.

You cannot afford to be without BETTER FRUIT if you are in the horticultural game on a large or small scale.

And by establishing a new one-price-to-all-at-all-times, BETTER FRUIT is within the means of every grower.

COUPON

Name

Address

City State

Amt. \$..... Years.....

THE NEW RATES:

Five years Three Dollars

Three years Two Dollars

One year One Dollar

CALIFORNIA

EARL G. DELZELL has been unanimously elected general manager of the California Fruit Growers' Exchange, to succeed G. Harold Powell, who died suddenly February 18, while attending a dinner party at Pasadena. Mr. Delzell had been assistant general manager for a number of years. He began work with the exchange as an office boy. Mr. Powell was very widely known and respected in the fruit industry.

MEETINGS to be held at Sacramento have been announced as follows by Director G. H. Hecke of the Department of Agriculture: May 29 and 30, Convention California County Horticultural Commissioners; May 31, Federal Horticultural Board; June 1, County Horticultural Commissioners and Nurserymen.

ME. O'DEA, who has been fruit and vegetable inspector in the shipping inspection service, has resigned, effective April 15, to become a representative of the American Fruit Growers', Inc., in Sonoma and Napa counties.

AS A MEANS of giving the public instructive information about its doings, the California Prune and Apricot Growers' Inc., has appointed Dr. F. M. Coleman as lecturer for the organization. Dr. Coleman, who was formerly a grower, will be available for speaking tours, and will probably visit the leading colleges and universities of the Pacific Coast as well as appearing before innumerable societies and conventions in California.

STATE Quarantine Guardian L. O. Haupt, reported that he found a shipment of 10,000 prune trees from the Portland Wholesale Company, Portland, Oregon, infested with peach tree borer. When notified, the shippers said the trees were grown near Woodburn, Ore., and requested that they be destroyed.

FRANK R. BRANN, authority on horticultural matters, has been appointed county horticultural commissioner of Tulare county to succeed Charles F. Collins.

THE FAIROAKS Fruit Company last season shipped about 100 tons of bulk olives to eastern points, sending them in lug boxes of an average weight of 25 pounds. Instructions for the processing of ripe olives in the home have been broadcast. This plan of shipping bulk olives to the consumers, who will themselves pickle them, is said to be proving quite popular and successful.

A MOVE was made at a recent meeting of the California Cannery League, in San Francisco, to have the University of California establish a fruit canning laboratory.

IN A PEACH growers' contest conducted annually in Sutter county, the highest record last year was 31,200 pounds per acre, considerably under the 1920 record, due to frost and unusual rains.

A 40-BARREL shipment of strawberries was recently sent from San Francisco by boat, destined for England. The berries were frozen in sugar last August and September and are shipped under refrigeration of about 20 degrees.

PAYMENTS to members by the California Walnut Growers' Association for 1921 amounted to \$7,986,262, as compared with \$7,791,093 in 1920. It is believed this year's crop will bring in more than \$11,000,000. The association handled 82 per cent of the state's walnut crop in 1920 and 86 per cent in 1921.

W. A. MOREHEAD, a pear grower with an orchard near Woodbridge, on the Mokelumne river, reports that it has been necessary for him to put up a wire mesh fence to protect his

trees from beavers. The animals cut down several of his best trees.


IT IS REPORTED that more than 100,000 fruit trees, most of them apples, will be planted this season in Mendocino county.

LESLIE M. SHAW, former governor of Iowa and later secretary of the treasury, recently purchased a 20-acre prune orchard near Santa Rosa.

THE California Pear Growers' Association last season paid its members more than \$500,000, as compared with double that amount in 1920. Since 1918 the membership has grown from 218 to 1048.

FROM 6½ acres of Elberta peaches, L. P. Bizant of Reedley, harvested 112 tons and his dried peaches ran three tons to the acre. A block of 10 acres of Wickson plums averaged 645 pounds to the tree. From these tracts and an additional 1½ acres of Lovell peaches, 18 acres in all, he sold fruit worth \$12,000.

HOTEL HOYT
Sixth and Hoyt Sts.
Absolutely fire proof. Convenient to both Depots and all car lines. Rates Reasonable, consistent with Comfort and Convenience.



YOU'LL be surprised at the little cost at which you can make your house look distinctive. The window cut accompanying this ad, is known as the "Queen Anne" design.

For an additional \$15 or \$20 your whole house can have this classy window. Before you finish building send for our catalog. Rovig, 2227 First Avenue South, Seattle "Better Millwork."

You just know he likes to sell it!

For more than 50 years Ghirardelli's has been a counter-sign of satisfaction. To the grocer this original ground chocolate means no trouble in selling—just as, to you, it means no trouble in using. Because it is dependable, time-tried, full-value, he likes to sell it. For the same reasons you like to buy it.

Say "Gear-ar-delly"
D. GHIRARDELLI CO.
Since 1852 San Francisco

Send for new recipe booklet



GHIRARDELLI'S
Ground Chocolate

With the Poultry

BUYING BABY CHICKS

ONE OF THE great developments of the last few years is the hatching of baby chicks in large quantities by specialist hatchers.

The industry has now reached a point where millions of these youngsters are turned out yearly. The leading hatcheries are equipped with big scientific incubators, loaded with eggs from selected breeding farms, and operated so efficiently that husky, vigorous chicks are the result. These chicks are shipped long distances, which makes it possible for buyers to secure the babies of their choice, economically and safely, and avoid all the uncertainties and bother of home hatching, and the necessity of maintaining breeding pens.

As a consequence, many farmers and poultry keepers buy their chicks ready hatched by the hundreds and thousands, giving their time to raising and caring for a greater number of youngsters than would be possible had they to fuss also with sitting hens or individual incubators.

Owing to the care exercised by responsible hatcheries, in securing and keeping up their breeding flocks, the vigor and general quality of the chicks is a revelation to those not familiar with the industry.

▲ ▲ ▲

COUNTY INSPECTION PLAN

THE COUNTY extension organization in Alameda county (Hayward District) California, has taken steps through its poultry division to raise the standard of all poultry in the county by improving the quality of fowls used in breeding flocks. Owners of hatcheries in the county have entered into an agreement with the county extension organization to use eggs for incubation from selected breeding stock, excluding the incubation of eggs from the general run of fowls in the locality, with the understanding that the county extension organization shall furnish judges to pass on the desirability of birds selected for breeding. Already 20,000 fowls have been inspected, and those that have met the requirements in weight, laying, size, and shape of eggs, and in other ways, have been accepted as eligible for the production of eggs for hatching.

This method of controlling the quality of the poultry in a county is expected to result in a rapid general improvement in the productivity of the flocks. It should also give the county a good reputation wherever hatching eggs or birds are sold.

▲ ▲ ▲

AS THE WEATHER begins to warm up it is urgent that the flock owner pay more attention than ever to disinfecting the poultry house and yards. Paint the roosts with a good lice killer and sprinkle insecticide plentifully in the nests.

▲ ▲ ▲

WHERE THERE is only limited range for the flock it is an excellent plan to divide the space, spade or plow up the soil and sow oats or similar spring crop on one portion. When this crop gets a heavy start the flock is turned in and if possible the other portion is then seeded.

▲ ▲ ▲

ONE NEW JERSEY farm sells the egg output of 1000 hens to city folks through parcel post shipments. It is possible to work up such a trade and to make it pay the extra costs of containers and postage.

▲ ▲ ▲

EXTREME care must be taken not to crowd chicks in the brood coops. Crowding will result in overheating the chicks and this will mean stunted growth and possibly some dead chicks. A good house can be built from a dry-goods box or piano box, which may be covered with tur paper and prepared at small cost.

SICKNESS and disease usually start in unclean quarters. In such places lice and mites get their start and it is far easier to avoid them than to get rid of them, once they have a start. The coops should be cleaned and sprayed once a week, and clean chaff, shavings or sand put on the floor.

▲ ▲ ▲

ON CLEAR days now be sure to open the curtains if yours is an open-front house, as the sunlight is one of the finest germ killers at the poultryman's command.

▲ ▲ ▲

WASTE precious little time with ailing or feeble chicks. Even should you succeed in pulling them through, the chances are they never will be virile, paying birds.

▲ ▲ ▲

WET LITTER is a menace to the health of chicks or hens. It makes fine fertilizer on the garden and had better be put there promptly.

▲ ▲ ▲

IF YOU DID not mate up really worthy breeding pens it will pay you to buy high-class eggs or baby chicks.

▲ ▲ ▲

IT IS virtually as dangerous to overheat the chicks in the brooder as it is to have them get chilled.

▲ ▲ ▲

YOU MAY be wiser than the concern that manufactures your incubator but the chances are that you will get best results by following the directions that accompany the machine.

OUR GOOD friends make a practice of mentioning BETTER FRUIT when answering advertisements.

▲ ▲ ▲

We have been getting a great lot of inquiries from our ad in BETTER FRUIT.—Martin Bros., Brownsville, Oregon.

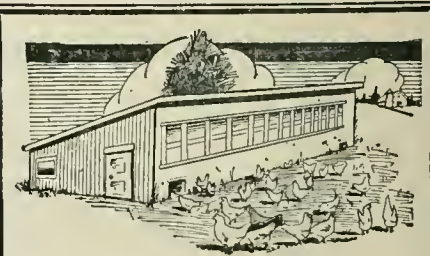


An Honest Incubator AT an Honest Price

Hot Water, Copper Tank, Self Regulation, Large Oil Tank, Safety Burner, THREE Walled, Western Red Cedar Construction From 60 to 4000 Egg Capacity 60 days FREE TRIAL. Electric and Oil Heated

Brooders Get our catalogue and free poultry helps

St. Helens Incubator Co. Centralia, Washington



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Arrow Carbolineum

(Formerly Avenarius Carbolineum)

Protects poultry against vermin—Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING COMPANY

222 E. Water St. Portland, Oregon

Many Men Are Making Extra Money --So Can You--

Better Fruit has an unusual offer to make you for part of your time, if your territory is not already taken. A postal card will bring you full particulars.

BETTER FRUIT PUBLISHING COMPANY

TWELFTH AND JEFFERSON STREETS PORTLAND, OREGON

Poison Problem Of Beekeepers

By H. A. SCULLEN

Specialist in Bee Culture, Oregon Agricultural College

THIS IS OFFERED, not because the writer is authority on the problem of spray poison which has apparently destroyed so many bees in the apple districts of Washington the past year and previous years, but rather with the hope that the readers of BETTER FRUIT may, by observation and study, assist in finding some solution for the problem.

That this is a problem which is of vital interest to the fruit producer, as well as the honey producer, need hardly be emphasized. Many of the more important fruit districts of the states of Washington, Oregon and Idaho are fast becoming destitute of bees since the commercial beekeeper is moving away, and the few isolated hives remaining are being killed off. In addition to this, the various native wild bees, which assist to some extent in pollination, are doubtless being affected by the poison.

In an effort to determine the extent of the damage to the beekeepers and to learn, if possible, the source of the danger, a questionnaire was sent to 392 beekeepers in the orchard districts of Washington in 1919. Reports were received from 107 beekeepers, who reported a total of 8490 colonies. Forty-seven beekeepers reported trouble from spray poison. Their estimated financial loss was \$5,510 from colonies completely killed and their estimated loss from the 1919 crop of honey was \$43,667 or a total of approximately \$50,000.

One very interesting fact brought out by the question as to how far from sprayed orchards the poisoned bees were located, was that out of 53 apiaries represented, 43 were one-half mile or less from sprayed orchards. The greatest distance poisoned bees were from sprayed orchards was two miles. It was also of interest to note that several uninjured apiaries were in or near sprayed orchards. A further study of the management practiced in such orchards may assist in finding a solution, in part at least, of the problem.

Replies from the questionnaire, as well as personal observations, have shown that a certain amount of loss has resulted from both the calyx spray and the second lead arsenic spray. Some reports indicate that still later sprays have also been serious with the bees. It is also important to note that poisoning seems to occur both during the nectar secretion and while there is a dearth of nectar. There, therefore, seems to be three possible sources of danger: (1) The bloom of the apple; (2) the bloom of the clover crop and other plants under the trees, such as dandelion, and (3) the moist spray on the foliage both of the trees and underlying vegetation.

There is some evidence that poison is being carried into the hive on the pollen collected either

from the apple bloom or from the bloom of vegetation under the trees.

THE WASHINGTON Experiment Station is now carrying on experimental work with various repellents, and it is hoped that some substance of practical value will be discovered as well as other important means of eliminating the trouble.

The symptoms of spray poison seem to be especially noticeable in the morning when the nurse bees are seen crawling about over the ground in front of the hive in considerable numbers, and in a more or less weakened condition. Some report evidence of swelling and dysentery, also. Many of the field bees doubtless die before reaching home. Since, however, it is a simple matter to send samples to the Bee Culture Office at Washington for analysis, minor symptoms are less important. The brood is also affected either by direct poisoning or by neglect due to the loss of nurse bees or both. Some report the loss of queens also.

In view of our limited observations, only a few general recommendations can be made:

First. Commercial bee yards should be moved to a distance greater than two miles from the orchard before spraying is started. This is expensive and should not be necessary.

Second. Late application of calyx spray, giving special attention to late and irregular blooming varieties of apples.

Third. A system of management for the cover crop, which will not allow heavy foliage or blooming under the trees during spraying.

Fourth. When the poisoning occurs at a dearth of nectar some of the danger might be averted by feeding. Some have reported success by this method.

Fifth. The use of a repellent in the spray, such as has been used in a limited way in Gipsy and Brown-tail moth control in Massachusetts, has been suggested. This method of control presents several problems not the least of which is the introduction of something into the spray which would repel the bees, but not the moth larva.

▲ ▲ ▲

I have changed my address and I have surely missed BETTER FRUIT. It is the only paper, and I think all people interested in agriculture or horticulture should not do without it.—Charles H. Scheer, Idaho.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.

Toppenish, Washington.

Salesmen everywhere. More wanted.

GEORGE STRUCK has purchased for \$17,000 the 40-acre bearing orchard of J. R. Nuna-maker, in the Upper Valley, at Hood River. The tract is considered one of the best in the Upper Valley and is on the new trunk line of the Mount Hood Loop Highway, near Parkdale.

▲ ▲ ▲

A RECENT report tells of establishment of a new prune packing record at the Salem plant of the Oregon Growers' Association. In eight hours running time the plant packed out 3011 boxes of prunes, an average of 375 boxes an hour. In filling a rush order the plant some years ago packed out 3500 boxes in ten hours' time.

▲ ▲ ▲

Advertisers appreciate it if you refer to BETTER FRUIT when writing them.

BOXES

GROWERS—CANNERS

Let Us Figure With You on Your Needs

American Box & Crate Mfg. Co.
PORTLAND, OREGON

BEES are your friends, Mr. Fruit Man. WE are friends of the bees.

SUPERIOR HONEY CO.

OGDEN, UTAH

Manufacturers of
BEE SUPPLIES

Write for prices.

B E E S

The Diamond Match Company

APIARY DEPARTMENT
Manufacturers of Bee Keepers' Supplies

Chico, California, U. S. A.
(The largest bee factory in the world)

Write for catalog and discount sheet; and, if a beginner, for Cottage Bee-Keeping, also for particulars of the MacDonald Aluminum Combs.

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

ETTERSBERG STRAWBERRY PLANTS—Direct from the originator. Ettersburg No. 80, 121, Delecto, Trebla, Bederarena, Red Cross, White Sugar, etc. 1 originated all these and many more. Ettersburg Strawberry Booklet free to prospective planters. Seed of Vicin Monantha, the "one-flowered" vetch, or lentil, 10 cents per pound, f. o. b. Ettersburg. Albert F. Etter, Ettersburg, Cal.

CORY THORNLESS BLACKBERRY—Extra large, vigorous plants from experienced growers and shippers; 12, \$2.25; postpaid; satisfaction guaranteed; illustrated folder. Write Chas. E. Mortenson, Lodi, California.

STRAWBERRIES SIX MONTHS IN YEAR—Plant Everbearers Superb Progressive; \$1.50 per 100. St. Regis everbearing raspberries, blackberry and loganberry plants, 6 for \$1.00. Apple Blossom Nursery, Rural 6, Seattle, Wash.

CURRENT BUSHES—Perfection, London Market and Wilder; \$3.50 per 100. D. R. Ruble, Salem, Oregon.

BLACKBERRY PLANTS—Cory's Thornless. Requires less sugar in cooking than any other. Macatawa—Raspberries. Alton Improved—Ranere—Blackcaps—Loganberry—Rhubarb roots. Jno. Lammiman, Rt. 1, Palo Alto.

CORY'S THORNLESS BLACKBERRY—Large and early. A sure winner; you get well-rooted plants true to name; 10, \$1.60, postpaid. Write for quantity prices. Wm. Mortenson, Route 1, Lodi, California.

CUTHBERT RED RASPBERRY PLANTS—\$1.25 per 100, or \$8.00 per 1000, F. O. B. Alvadore, Oregon. E. P. Saunders, Alvadore, Oregon.

LOGANBERRY PLANTS—50,000 choice plants; unusual low price. Harry Lanum, R. 4, Salem, Oregon.

BEEES

BEEES AND QUEENS—Keep bees to pollinize your fruit. Get more and better fruit. Make a profit off the fruit and bees too. Write for circulars. Nucess County Apiaries, Calallen, Texas.

BEEES for pollination. Healthy stock in good equipment. Limited number for March and April delivery. Prices on application. H. A. Scullen, Corvallis, Oregon.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. "Everything in Bee Supplies." Superior Honey Co., Ogden, Utah.

JOHNSON'S PACKAGE BEEES and vigorous Italian queens. Safe arrival and satisfaction guaranteed. Write for reduced prices. George T. Johnson, 165 Raymond Avenue, San Jose, California.

80 COLONIES BEEES in Ten Frame Hives, combs on wired foundation; no disease. Price \$12.00 per colony. W. H. Dancer, Myrtle Point, Oregon.

POULTRY

BABY CHICKS—S. C. Rhode Island Reds, \$22.50 per 100; S. C. White Leghorns, \$18 per 100; all sold to April 6. Order now from old and established breeders who have made good on the merits of their stock. Maple Brook Poultry Farm, Southworth, Wash., Box 3.

BABY CHICKS—Reduced prices on White Leghorns, Reds, Barred Rocks, White Rocks, Minorcas and Anconas. Booking orders now. Postal secures Free catalog. Write today. C. N. Needham, Salem, Oregon.

S. C. BUFF LEGHORNS—Just won fifth cockerel, Chicago Coliseum. Cockerels and eggs. M. H. Mann, Wood Cross, Utah.

500,000 WHITE LEGHORN Baby Chicks—Bred for eggs, vigor, size. Safe arrival in good condition guaranteed. Free catalog and book on "Raising the Chicks." Oak Heights Poultry Farm, Route 3, Box 67B, Tacoma, Wash.

HOGANIZED SINGLE COMBED BUFF ORPINGTONS—Descendants of British Columbia contest winning hens; Mammoth Bronze turkeys. Pearl guineas' eggs for sale. Mrs. J. Wellborn, Warren, Oregon.

WINNERS—R. I. Reds (both combs). Toulouse Geese, Bronze Turkeys; stock and eggs for sale. J. Nonnemacher, Rt. 3, Yakima, Wash.

HEAVY LAYING STRAIN—S. C. Brown, S. C. White Leghorn hatching eggs, at fair prices. Deer Creek Stock Farm; Kerr Bros. Props., Sheridan, Oregon.

REAL ESTATE

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John T. Black, 197th Street, Chippewa Falls, Wisconsin.

TEN ACRES, \$4200 ON STATE HIGHWAY—One mile from town with accredited high school. About five acres orchard finest commercial varieties, balance truck patch; best of soil. Will give a good man busy. Average revenue \$2500 yearly. Can be doubled. Good packing house; garage, barn and small dwelling. XX, care Better Fruit.

FOR SALE—Fine income orchard and alfalfa, near Lyle, Washington. Last crop sales about \$2300. Price \$5500, plus any expense paid against this year's crop, \$3000 cash. This is good and a splendid bargain. Get details. D. C. Roschero, 368-12th Street, Oakland, California.

THE A. L. JOHNSON CO., of Turlock, California, are prepared to offer many fine locations of California ranch and residence properties to interested parties at reasonable prices. For information write box 363, Turlock, California.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables, hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Wash.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FOR SALE—Apple orchard, commencing to bear; finest box varieties; highest quality attained. Bolling Hall, Waynesville, N. C.

FORTY-THREE ACRES—Upper Hood River Valley, on new Loop Road around Mt. Hood; 15 acres commercial orchard, 10 years old, just coming into full bearing; 2 acres strawberries; 3 acres alfalfa; 4 acres under plow; fine potato land. Two good houses; two barns, one used for packing house; good stream, some free water; every acre under irrigation ditch; two miles from town; depot, stores, grade and high schools, church and library. One of choicest locations in upper valley. Fine view of Mt. Hood and Mt. Adams. Price \$15,000, \$6,000 cash. M. I. C., care Better Fruit.

MISCELLANEOUS

TRACTOR BARGAINS—Cletrac "W" only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Badley, 425 E. Morrison, St., Portland, Oregon.

WANTED—To get into communication with several professional box and apple packers who can give good recommendations. Eastern letters also answered. Luray Orchard Co., C. E. Rhodes, manager, Luray, Virginia.

BEFORE BUYING—Have an experienced horticulturist examine your orchard for you. I saved one man \$5,000 on a \$14,000 deal. Special attention given to orchards of non-resident owners. Private demonstrations and consultations given. Luke Powell, Yakima, Wash., consulting horticulturist. (I do not sell real estate.)

ALFALFA SEED, CLOVER SEED, SEED corn—We are located in the heart of the largest and best alfalfa and clover seed district in the west and can give you both quality and price. Get our samples and quotations before buying. Our seed corn is of the finest acclimated strains. Garden and flower seeds of all kinds. Send for our catalog. Darrow Bros. Seed & Supply Co., Twin Falls, Idaho.

KENTUCKY LEAF TOBACCO—3 years old, nature cured. Don't send a penny; pay for tobacco and postage on arrival. Extra fine quality chewing or smoking, 10 lbs., \$3.00; medium quality smoking, 10 lbs., \$1.25. Farmers' Union, D-65, Hawesville, Ky.

TOBACCO—Kentucky natural leaf chewing and smoking; rich, ripe, mellow; two years old; aged in wood; 10 lbs., \$3; 20 lbs., \$5; sample, 20c. Maddox Bros., Dept. 22, Mayfield, Ky.

TILICUM—A fluid grafting and covering wax; no heating required, \$1.25 a quart prepaid. Paul Kruger, Watsonville, California.

44-40 REMINGTON HAMMERLESS RIFLE—Pump action, 12-shot capacity; absolutely brand new, never used. Cost \$58.36, price \$28. Joseph Pierce, Box 25, Pearyn, California.

PEDIGREED White Scotch Collie Pups. Write for descriptive price list. Mrs. E. A. Bennet, Salem, Oregon.

HOMESPUN CHEWING OR SMOKING TOBACCO—5 lbs., \$1.25; 10 lbs., \$2.50; 20 lbs., \$4.50. Farmers Union, Mayfield, Ky.

TRY OUR INTRODUCTIONS—Wonderful new hybrid alfalfa. Write J. L. Lawson, reliable tree and seedman, San Jose, California.

HUBAM Annual White Sweet Clover Seed; inspected by county agent. Albert Day, Newtown, Ohio.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO. 427 Oregon Building Salem, Oregon

POSITIONS

\$135 MONTH COMMENCE. U. S. government railway mail clerks. Men, boys over 17; steady; vacations; list positions free. Write today sure. Franklin Institute, Dept. C. 105, Rochester, N. Y.

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.

Catalog mailed on request.

Hendrickson & Scudder

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The ARCADY Company Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 12th & Jefferson Sts. Portland, Oregon

Also PRINTING
MULTIGRAPHING
ADDRESSING
MAILING
MAILING LISTS

MAIN
8829

THIS PUBLICATION IS A PRODUCT OF OUR PRINTING DEPARTMENT

THE WORLD—OUR ORCHARD

PLAYING THE GAME

NEVER in the history of the fruit trade has any concern made heavier losses than we did last season in the apple deal. This is a matter well known to all the fruit trade of the United States. It is, therefore, more than gratifying to us to announce the continuance of our policy of doing business on the same basis, regardless of whether we win or lose.

We do not wish to appear egotistical, nor do we wish to put ourselves on a pedestal of superiority over our friends and competitors. However, we can look back upon our business experience of last year with pride. The policy of this firm is known throughout the world—wherever a single package of fruit or produce is handled—in a commercial way.

The code of ethics employed by this firm is based upon the American ideal of the square deal.

When Moses received the ten commandments and brought them from the mountain to the chosen people, the fruit trade was not taken into consideration. If it had been, we are quite sure that there would have been woven in much pertaining to the fruit business, and written thus, to the everlasting honor and glory of a great and grand industry.

1. Thou shalt play the game straight, irrespective of consequences.
2. Thou shalt pay all drafts, regardless of market conditions upon arrival of cars.
3. Thou shalt back thy judgment with thine own coin.
4. Thou shalt not turn down any cars, unless thy shipper is actually trying to defraud thee.
5. Thou shalt consider a contract a contract and which is made not to be broken, no matter what the cause.
6. Thou shalt consider thy firm's good name thy biggest asset.
7. Thou shalt consider it a privilege to lose, from time to time, for as long as thou canst take a loss without a kick, thou art a good sport and deserveth success.
8. Thou shalt keep one set of books, so when thy shipper calls on thee and desires to examine thy accounts, thou canst look him straight in the face and tell him to go as far as he likes.
9. Thou shalt never overquote the market, thereby giving false witness against thy neighbor, who has troubles enough of his own and which may induce the husbandman to ship goods to thee which he could have sold at higher prices elsewhere.
10. Thou shalt not covet thy neighbor's business, for there is enough for everybody and then some.
11. Thou shalt particularly take care of the goods sent to thee on consignment by thy fellow man, who may be thousands of miles away from thy business abode, but who depends upon thy honor and wisdom to see that he receives proper compensation for the harvest made by the sweat of his brow.

By playing the game according to these commandments, thou wilt live long in the land and wilt earn a heritage of which thy sons will be proud when thou art laid to rest among thy fathers for, after all, a good name is greater than worldly riches.

Steinhardt & Kelly

273-277 Washington Street

Cordoba 2260 Buenos Aires
ARGENTINE

NEW YORK

102-106 Warren Street

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.

Power!

There's
only one
Caterpillar
Holt
builds it

Pound for pound of weight—inch
for inch of size—this is the most
powerful tractor on the market

CATERPILLAR

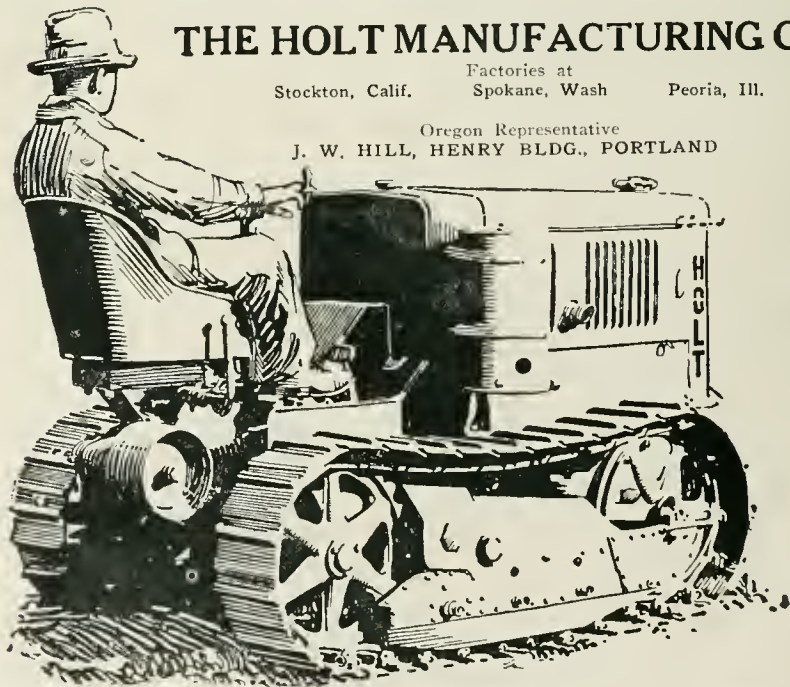
T-35 TRACTOR

In a space only four foot by six this tractor concentrates 25 motor and 15 drawbar horsepower. The T-35 weighs only 4000 pounds—ground pressure less than 4 pounds per square inch. It is a marvel of simplicity—contains only three units—motor, transmission, trucks with tracks. All parts enclosed. All bearings anti-friction. "Caterpillar" T-35 Tractor is ideal for orchards, vineyards, berry fields—for road patrol work, hauling, general contracting—for all power needs on the small farm—for supplementary power on big acreage. It has almost unlimited usefulness for belt work—for pumping, sawing, grinding and other operations. Our Pacific Coast factory and service organization assure service anytime, anywhere. Write at once for complete information.

THE HOLT MANUFACTURING CO.

Factories at
Stockton, Calif. Spokane, Wash Peoria, Ill.

Oregon Representative
J. W. HILL, HENRY BLDG., PORTLAND



MAY 1, 1922

BETTER FRUIT

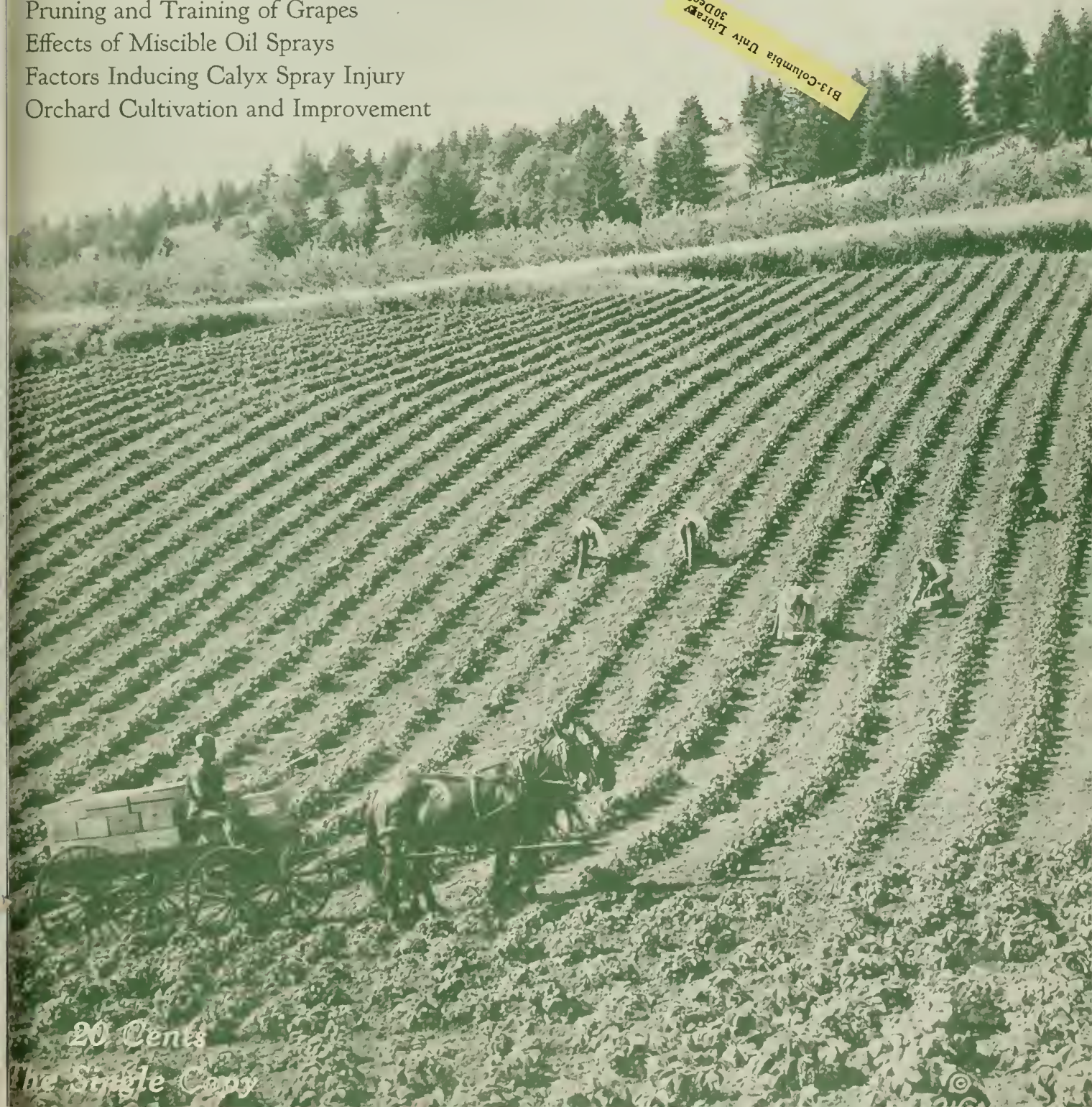
The Pioneer Horticultural Journal of the Pacific Northwest

MAY, 1922

Features In This Issue:

- Tests in Curbing Melon Pests
- Merits of the Black Raspberry
- Pruning and Training of Grapes
- Effects of Miscible Oil Sprays
- Factors Inducing Calyx Spray Injury
- Orchard Cultivation and Improvement

B13-Columbia Univ. Library
30Dec23



20 Cents

The Single Copy



Boxes of apples being unloaded by means of our gravity roller conveyor to be sorted and re-packed for shipment



Portion of Standard System installed in the packing plant of the Peshastin Fruit Growers' Assn., Peshastin, Wash.

Standard Indoor Transportation Systems

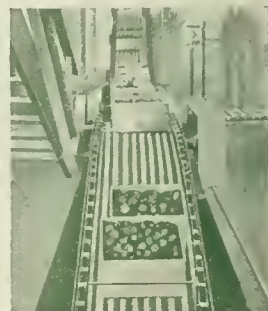
eliminate at least fifty per cent of the lifting, carrying or trucking of fruit in a modern apple packing or canning plant.

Our representative in your district will be glad to confer with you and show you how effectively a flexible Standard Conveying System can fit into your own specific handling conditions.

Write to our home office or to our representative in your district and get started the GRAVITY WAY. Act promptly so that you will be certain of securing the wonderful benefits of a Standard System for the summer and fall packing season.



Spiral chute delivering boxes on a gravity roller conveyor to shipping department for storage or transportation.



Part of the Standard Conveying System in the plant of the Apple Growers' Union, Cashmere, Wash.

STANDARD
CONVEYOR COMPANY.
NORTH ST. PAUL, MINN.

D. E. FRYER & COMPANY

421 Rialto Bldg.
Butte, Mont.

701 Gasco Bldg.
Portland, Oregon
Paulson Building
Spokane, Wash.

Lbr. Exch. Bldg.
Seattle, Wash.

SERVICE
IS OUR FIRST N-AIM



THE
SIMPSON & DOELLER
CO.
1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES
AND PRICES

WE CAN FILL YOUR
ORDER FOR STOCK
APPLE, PEAR, CHERRY
AND STRAWBERRY LABELS
IN 24 HOURS.

A deadly spray

—and it costs only two cents
a gallon to spray with
Hall's Nicotine Sulphate.



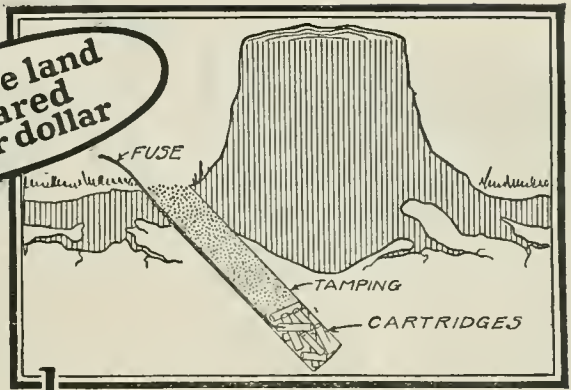
HALL'S

**NICOTINE
INSECTICIDES**

HALL TOBACCO CHEMICAL CO.
3949 Park Ave., St. Louis, Mo.

**1/2 more land
cleared
per dollar**

—with **PACIFIC
STUMPING POWDER**
Save still more by
using the latest,
cheapest blasting
methods—



Making the Hole

IN blasting stumps, the first thing to do is to make the hole to receive the charge of dynamite.

When removing large stumps such as are common in the Northwest, the charge should be placed so that there will be 16 to 24 inches between it and the bottom and the center of the stump (See cut). The "shot" then lifts the stump clear with much of its roots, instead of merely splitting it.

To make the hole, loosen ground with crowbar and clean out with long-handled tilling spade.

The subsequent steps in stump blasting will be described in future issues of this paper.

For utmost economy use Pacific Stumping Powder—the new Du Pont Farm Dynamite. A 1 1/4 x 8 inch stick is equal in strength to a 1 3/8 x 8 inch stick of any standard stumping powder—and Pacific Stumping costs 30% less per stick. You get 1/2 more sticks for every dollar. Buy it from your local dealer.

Write for free copy of 125-page book "Development of Logged Off Lands," giving full instructions for use of explosives for land clearing, ditching and tree planting.

E. I. DU PONT DE NEMOURS & CO., Inc.
Spokane Seattle Portland

NON-HEADACHE



NON-FREEZING

PACIFIC
STUMPING POWDER



DEPT. B.

LET US HANDLE

your Apples, Pears, Peaches,
Potatoes, and all kinds of Fruit
and Produce.

Cash or Consignment

Write us what you have to offer. We give prompt service.

**PORTLAND PRODUCE
DISTRIBUTORS**

215-217 Washington St.
Portland, Oregon

“As Ye Sow—”

A bumper harvest inevitably is prefaced by a period of work and waiting.

For a time we became accustomed to seeing business spring up over night like a bright flowered fungus. And we lost the idea of patient cultivation. Yet that is the only way to build any undertaking that endures and grows richer with the years.

A letter received recently from our Spokane representative is to the point:

“You will notice the order of Mr. — for 50 Rainier apple trees enclosed. He said he had always dealt with the Washington Nursery and found our trees the very best. He stated that his orchard of Winter Bananas was purchased from us and that at the time of planting he paid us 11c per tree more by the hundred than his neighbor paid for trees purchased from another company. However, Mr. — had a crop two years earlier than his neighbor and in every other respect his trees have proved to be superior.”

A number of years have slipped by since the above mentioned transaction took place. As the letter indicates, both orchards referred to are now in bearing.

One planter pinned his faith on good nursery stock as the foundation for a profitable bearing orchard. His faith was well founded to the extent that he was willing to pay more money to insure real quality in his nursery trees.

The two crops gained not only repaid many fold the difference in the first cost of his trees—but the superior bearing qualities of his orchard will continue for many years.

Good trees with plenty of good roots, propagated from bearing orchards, guaranteed true to label, delivered to you in live, fresh condition, inspected twice by us—once by the deputy state horticultural inspector before shipment—that's our idea of service.

Our line includes all the leading standard varieties of fruit and shade trees, shrubs and flowers. Send a list of your needs. Planting time is near—do not delay.

Washington Nursery
Co.

Toppenish, Wash.

Your Tree Men Since 1903



You'll Enjoy Working These Little Wonders In Your Home

IT'S surprising how much you can accomplish in beautifying your home with a little paint and work—that is really fun.”

Floors, woodwork, furniture, bric-a-brac and other home things are very easy to do over when you know how. The reward in improved appearance is worth many times the cost and effort required.

We have a special “Home Service Paint Department” which devotes its time to telling women just how to refinish home things successfully.

Just write this department, describing what you want to paint, enamel, or varnish and how you want it to look and our experts will tell you exactly how to do it.

We make special paints, varnishes, enamels, wall finishes and stains for you to use. They are the finest materials of their kind that we know. We have been making these products for 73 years.

Fuller's Free Advice and Fuller's Products will be very helpful to you in beautifying your home. Take advantage of them now.

Free Advice

Write us now—a postcard—for Fuller's “Home Service” Paint Book, which tells you just what to buy for every kind of painting. Send full description and get our free advice on any kind of painting you want to do.

Decorat Varnish Stains for refinishing furniture and interior woodwork. They stain and varnish in one operation. Match the color of any natural wood. 8 colors.

Silkenwhite Enamel produces a rich, beautiful finish on woodwork and furniture. Flows out smoothly and does not show brush marks. Produces a mirror-smooth surface. Stays white and wears long. Gloss white, semi-gloss white and 8 colors.

Rubber Cement Floor Paint: A durable, sanitary, waterproof paint for floors of kitchens, closets, etc. Spreads easily, covers well. Dries hard over night. 12 colors.

Fullerwear: The all-purpose spar varnish which is unexcelled for all interior and exterior surfaces. Fine for linoleums, floors, woodwork, furniture, front doors and vestibules. Dries hard and glossy. Very durable.

Also makers of House Paint, Barn and Roof Paint, Washable Wall Finish, Tractor Paint, Fifteen-for-Floors Varnish, Auto Enamel, Porch and Step Paint, Fuller's Hot Water Wall Finish (kalsomine), Silo Paint, Milk Can Enamel, PIONEER WHITE LEAD, Implement Paint and Fuller's Oil Stains.



Fuller's SPECIFICATION “Home Service” Paints Varnishes - Enamels - Stains

Manufactured by W. P. Fuller & Co., Dept. M. 23, San Francisco

Pioneer Paint Manufacturers for 73 Years. Established 1849
Branches in 19 Cities in the West. Dealers Everywhere.

Free Book—Send Coupon

Send coupon for Fuller's “Home Service” Paint Guide, a free book which tells you how to paint and varnish home things, what brushes to use, etc.



Ask our Service Department any question about paint which you would like to have answered—complete detailed advice is given free.

W. P. Fuller & Co.

Dept. M. 23, San Francisco

Please send me without charge a copy of your “Home Service” Paint Guide.

Name.....

Address.....

City..... State.....



BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOL. XVI

PORTLAND, OREGON, MAY, 1922

NUMBER 11

Orchard Cultivation and Improvement

By O. M. MORRIS,

Head of Horticultural Department, State College of Washington, Pullman

THE FRUIT trees of our common orchards and gardens all grow well in good soil. There are extreme types of soil in which it is necessary to select special varieties for adaption, but ordinarily any good agricultural soil will produce good fruit trees if the climate is favorable to their development. The financial returns are the more definitely limiting factors to the distribution of orchards than the possibility of growing the trees. The local surrounding conditions that give opportunity for the trees to develop fruit crops regularly are usually the limiting factors to orchard planting.

Wood growth and fruit production are normal activities and in no respects is it necessary to secure an abnormal development of a fruit tree in order that fruit production may be accomplished. Soils that have produced plants for a long period of time, providing those plants have not been burned or carried away, are usually sufficiently loaded with humus to make good fruit lands.

Tillage is one of the best fertilizers that can ordinarily be applied to land that is growing annual crops. This is especially true with soils that are of a clay loam or clay type. Any land that tends to melt or puddle is clearly benefited by carefully developed tillage practices. The normal breaking of the soil, pulverizing, aerating and mixing gives better opportunity for the normal chemical processes of plant food development to take place. The tillage must not be of such a character as to remove the depth of tilled soil from the use of the plants, but rather of such a type as once a year to work over, mix and pulverize the soil to a depth reached by the air in the normal quick changes of climate.

Our tree crops are different from our annual crops in that if they are to utilize the fertility contained in the normal surface soil the tillage processes must be developed so that the root material developing in the surface soil will not all be destroyed each year.

Great progress has been made in orchard development in the last few years. Our

Do you know how to go about testing your orchard soil to learn what plant food elements it lacks? Lots of growers do not. If you happen to be one of these be sure to read the soil testing methods Professor Morris gives in this article. It will be of interest to every orchardist to read what he has to say of the rather prevalent theory that a different sort of plant food is needed to develop fruits than is required for tree growth. However much the title may smack of "old stuff," the reader will find that Professor Morris is giving present-day trends and ideas.

processes of tillage have changed from that of using the orchard as a pasture or meadow land to the extreme of constant clean tillage, thus preventing any other growth in the orchard. From this we are swinging back in many regions to the opposite and encouraging a growth of vegetation to cover the ground. This crop falls and decays on the surface year after year without disturbing processes of tillage other than that which is necessary to take care of irrigation or other peculiar local needs.

I seriously doubt whether we know yet what is the best process of orchard tillage. The orchards have been unsatisfactory in their development and we changed the plan. During the process of change an improvement was noticed. This improvement, however, in all probability, could not be fully attributed to the change in methods of soil management. The time we were bringing the orchards into clean tillage was the period in which pruning was the most broadly advocated and generally practiced. During this time, the processes of spraying were greatly improved, and orchard heating was put into practice to a greater extent than ever before.

With the development of orchards far past what our fathers expected, we are again becoming discontent and swing quickly from one extreme to another. I

am convinced that every district that has a distinct climate of its own, will have also its own cultivation and crop management problems.

Most of the country west of the Cascades has an abundant rainfall and during part of the year even an excess of rainfall. Some local districts, however, suffer very distinct droughts in mid-summer and could probably be benefited greatly by local installation of irrigation projects.

There is the advantage of not having extremely cold winters. This gives opportunity for the development of certain types of crops and their growth through a winter period and the development of a type of vegetation that can be used to a very good advantage in maintaining soil fertility.

PLANT FOOD ELEMENTS—The plant food materials in the soil that are most commonly considered in fertilizer work are: nitrogen, phosphoric acid and potash. In the soils of irrigated districts nitrogen is most commonly the element forming the limiting factor of plant growth. In Western Washington and Oregon the heavy rainfall of many of the districts causes nitrogen also to be a limiting factor in clean tilled land. This is not so definitely a limiting factor in our forested lands or in the lands heavily covered with a growth of vegetation that is constantly adding decaying material to the soil.

Nitrogen exists in the soil with a combination in the plant tissue or in water-soluble forms. The heavy rainfall then would tend rapidly to carry away all of the nitrogen materials that are not tied up in plant tissue. This is fundamentally the reason why bringing land that has been producing tremendously heavy growth of trees, under cultivation, has soon brought indications of its being exhausted. In Clarke County Washington, some of the soil that has been under cultivation for 25 to 50 years has been found definitely depleted in its nitrogen content. This, of course, has resulted from the fact that the types of agricultural practices on the land had not

been adding yearly a reasonable supply of vegetable tissue to decay there and add its portion of nitrogen and help hold the water-soluble nitrogen in the soil. The rainfall of the district has carried out water during the winter usually more rapidly than during the summer so that the amount of nitrogen material that becomes water-soluble during the winter is to a very large extent lost. The plants start growing in the spring in a soil that is but little, if any, more fertile than it was at the close of the growing season in the previous year.

As a contrast I want to cite you the fact that in the dry land district some little progress is made in the warmer districts by the accumulation of this nitrogen supplied by the crops. There is not ordinarily the rapid growth of many plants in the early spring in your heavy rainfall sections that is common in many districts of lesser rainfall.

I have mentioned Clarke county as an illustration of a district in which the nitrogen supply in the soil has run below that best suited for crop production. With the addition of nitrogen in an available form their crops have shown splendid improvement and there is every reason for them to be optimistic about the permanency of the agricultural development.

Potash is another material that in many localities is wanting in the soil to such an extent that the plants are retarded in their growth. Potash is more readily soluble than is phosphorus. Consequently the heavy rainfall carries out large quantities of this plant food material unless a system of crop and soil management is established that will keep the soil well occupied and the potash that is dissolved will be absorbed by the decaying vegetable material.

Potash and phosphorus are contained as a part of the soil itself. The original source of such material is from the rock from which the soil is made. Soils that are derived from granite and basalt rock or volcanic ash soils are usually rich in both of these materials. However, heavy rainfall over land composed of such materials will in time deplete the supply unless such soils are so handled that a large supply of vegetable material is turned under frequently. Lands that have been in timber or native growth and have received a good mulch of vegetable material each year have usually been found to be well supplied. When such soil is brought under cultivation, however, and given to the use of plants which do not turn back to the soil each year large quantities of vegetable material, a process of depletion sets in and the time required for the wasteful process to absorb the stored material is measured by the conditions existing, but that it will be attained sometime can be marked as an absolute certainty.

We often hear people say that the trees grow all right, but do not have the proper kind of food to cause them to fruit well. This is an error. An abundant supply of

plant food material, with a reduced water supply, may cause trees to be changed from the yearly wood growing habit to that of slower growth and fruit production. It is all the same kind and type of plant food material in the soil and no one of these materials commonly thought of as fertilizer has a special function to perform in the development of a certain part of the plant.

It is a common impression that phosphorus is particularly used in developing the fruit and seed and nitrogen in developing the foliage and wood. This may all be true, but it is only half the truth. Potash and phosphorus are also used in developing the foliage and wood and nitrogen and potash are used in developing the seed, and so on through the list. All of these materials are necessary to development of the plant. And a well balanced proportion of material forms a fertile soil.

The lack of fertility in a soil is usually indicated by poor and unsatisfactory growth of the plant. It may in part be indicated by the lack of satisfactory fruit production. A soil may contain a great quantity of the plant food materials, but if it lacks in one essential, that one essential element will measure the amount of growth and de-

velopment that can reasonably be expected to take place in the orchard. The only way to determine what particular material is under-supplied in the orchard is to fertilize different areas with different material and compare results. At the same time one definite plot should be left unfertilized in order to make sure that our improvement in growth, if any is obtained, is not due to causes other than the application of the fertilizer in question.

HOW TO TEST SOILS—One of the best methods of soil testing known is to fertilize one small plot with nitrogen, another with phosphoric acid, a third with potash, a fourth with nitrogen, and phosphorus, a fifth with nitrogen and potash, a sixth with potash and phosphorus and a seventh with all three combined. Then, if one plot is left unfertilized you should have a series of eight plots. If there is reason to believe that lime is wanted, it is a good plan to lay out your fertilized plots in long strips and run your lime across one end of your fertilized plots. This will give you all of the desired combinations and will enable you to determine whether

(Continued on page 22)

Tests in Curbing Melon Pests

By H. A. CARDINELL and E. M. PAGE

University of Missouri College of Agriculture, Columbia



Operator in Missouri cantaloupe field dusting with hand machine against cucumber beetles.

MELON growers have never in the past had a material that would satisfactorily control the striped and spotted cucumber beetles. The United States Department of Agriculture, Department Circular 154, gave the results of several years' trial with nicotine sulfate in a dust form that showed promise of being of unusual interest to growers confronted with these insects. A few melon and truck crop growers were able to obtain this dust in

time for trial in the summer of 1921. Only the 10 per cent strength of the 40 per cent nicotine sulfate dust was used by Missouri growers in whose fields our studies were made, because these beetles required this strength.

Applications of this dust every five to seven days, during the active beetle season, gave nearly perfect control and a minimum of beetle injury, while untreated fields,

(Continued on page 17)

Factors Inducing Calyx Spray Injury

Query by Affected Grower: Answer by Plant Expert

Here is detailed an unfortunate loss on apple crops of 1921, as reported by O. G. Rogers, of Looking Glass, Oregon. Mr. Rogers, from his study of the damage and curtailment of crop deduced that the cause was largely that of injury by the calyx spray of lime-sulfur and arsenate of lead. He built up strong evidence of this. Every apple grower finds the problem presented one of interest. Diagnosis of the case immediately follows Mr. Rogers's article.

AT THE beginning of 1921, the fruit growers of our section, particularly the apple growers, had great hopes of a good fruit year. It was due.

There were plenty of large plump fruit spurs and the trees were in healthy vigorous condition. Except for the danger of frost all that was necessary to realize our hopes was successfully to combat the insects and fungus diseases.

The above condition particularly applies to us and our orchard of Winter Banana, Spitzenberg and Newtown apples. The trees are ten-year-old and everything was as hoped for until after the calyx spray was applied. In this spray was used the same strength of lime, sulfur and arsenate of lead as in former years: that is, 1 to 40 pounds lime and sulfur, plus 3 to 200 arsenate of lead.

Although we had never had scab in other years but, because of so much being at stake, I made particular effort to wet the leaves as well as the calyx end of apple. About one week after applying this spray I noticed the leaves from some of the last trees sprayed were falling.

I supposed then that the last tank sprayed out was made too strong of lime and sulfur, but a few days later the falling of the leaves was fairly general throughout the orchard. This defoliating of the trees kept up until after the 30-day spray.

My neighbors and the experts who visited the orchard were not willing to concede that damage was due to spray, but thought it caused by winter injury. However, I was convinced that spray was largely at fault because some few trees that were skipped showed no such condition.

Coincident with all this, the semi-nakedness of the trees, causing a devitalized condition, seemed to throw the doors open to the scab, for scab was invariably worse where the foliage had fallen the most. On such trees the scab ran as high as 90 per centimeter, and from that down to 50 per centimeter, while on the trees that were skipped scarcely any was apparent.

The temperature at the time of spraying was about 70 to 75 degrees, unusually warm for so early in April. No doubt this caused the lime and sulfur to burn the leaves. Winter injury might, in a limited way, have been a factor.

However, there was no need of crying over spilt milk. The damage was done, the question was how to salvage the most from the wreck. Thinning and good cultivation were the only things left to do. So we thinned, thinned again and, in part, the third time, always taking the apple that showed enough scab to make it a cull or even "C" grade so that, in many cases, a limb which could easily carry a dozen apples had only two or three. In the orchard as a whole there was probably 60 per cent of what would have been left under normal conditions.

The result was we had less apples thrown into culls because of scab than for sun scald or other defects and they were larger than apples of the same variety grown in this community.

My conclusion from this experience is that the college should furnish us a table of temperatures to guide us in applying these sprays that are liable to burn the foliage.

I learn now that many growers use 1 to 50 solution of lime and sulfur for the calyx spray and 1 to 60 in the 30-day spray. I learn also that others nearby who used the same strength as I did and sprayed on the same day had practically the same results.

It is possible the type of nozzle used and the power of the machine make a difference and that one could regulate the strength of the solution according to the kind of work the spray outfit is capable of doing. At any rate, we never had any such trouble when using our old machine, which was not capable of doing thorough work.

The deduction of Mr. Rogers on the question of injury by the calyx spray was submitted for expert analysis, to Professor H. P. Barss, pathologist of Oregon Agricultural College Experiment Station. What follows is his statement on the subject. His analysis has very practical application, for it not only shows how such spray injury may come about, but proceeds then to suggest the underlying causes which may be eliminated, at least in most instances.

by Mr. Rogers of Looking Glass. The injury took the form of leaf burn and leaf drop and was frequently followed by severe dropping of fruit. In some instances this injury took place after the "pink" or pre-blossom spray, but for the most part, the principal damage resulted after the calyx spray had been applied.

Many growers believed that possibly the lime sulfur was used too strong, but in view of the fact that ordinary dilutions were used in practically all these cases, dilutions that in other years have given very little if any injury, we must look to other causes than strength of spray to explain the situation.

In the first place attention must be called to the fact that apple trees vary a great deal in the matter of susceptibility to spray injury with lime sulfur, depending upon the condition of vigor and upon the weather conditions which prevail. Observations show that orchards planted in fertile soil or in soil where the fertility has been maintained by the efforts of the grower and where proper cultivation has resulted in healthy root conditions from season to season have proved not as subject to serious spray injury as orchards in poor soil, or in soil which has not been cultivated enough to conserve sufficient moisture through the season. The reason lies in the effects on the vigor of the trees.

Where trees are grown on land that is likely to be water-logged in early spring, or on soil that dries out before the end of the growing season the health of the root system is impaired and the leaves on such trees are more than ordinarily subject to spray injury. Vigor of root system and consequent vigor of foliage is greatly promoted by the very early start in spring cultivation practiced by an increasing number of growers each year.

Experiment station tests disclose the fact that plowing before the trees come out in the spring tends to bring about a healthy root condition because of the good soil aeration permitted by this practice at the very outset of the season. Furthermore, early plowing is of great advantage in scab control since the old leaves which carry scab through the winter and pass it on to the new growth in the spring are, to a considerable extent, covered up so they can no longer discharge their disease-producing spores in the orchard.

The relation of proper cultivation and care to spray injury was well illustrated in an apple planting last season where the trees were all of the same age and variety, but where one part of the planting had been poorly cultivated the previous year and had not been given the proper early spring cul-

(Continued on page 24)

OBSERVATIONS made by the Oregon Experiment Station last year showed serious spray injury to apple trees in many Western Oregon orchards such as reported

Pear Culture in Western Washington

By ELMER HARMELING

Vashon, Washington

THE FIRST and all important question regarding pear culture is, "What soil and location is best adapted to get best results from pear trees?" The best soil for pears is a loam or shot clay soil with depth of from two to three feet, well drained, either naturally or artificially, with a slightly rising location sloping to northeast. Pears are early bloomers and on this slope they will be somewhat retarded in blooming, being less liable to be caught by late frost.

Prepare the soil for your pear trees as you would for your garden. The best is none too good. If the ground is already fertile all that is necessary is a good deep plowing, discing and harrowing. If your land is new and has never had a good clover or other legume crop plowed in, do not plant pear trees, unless you have plenty of barnyard manure, until you have plowed under at least one good crop of clover or vetch.

It is very discouraging to plant trees on new unfertilized ground and watch them stand there for two or three years and make practically no new growth. Wait until the soil is in good fertile condition and you will be far ahead in the long run.

In most of the coast country one can plant almost any time the trees are dormant, from the first of November to the first of April. Fall planting is advisable, for you usually have more time to give to the work and the roots have plenty of time to establish themselves and form the callous at the ends, from which the new roots start. Do not plant in a hurry. A little care and extra labor in planting will bring good returns on the investment. Dig the holes large enough for all the root system and then dig them a foot larger all around and a half a foot deeper. Put the top soil on one side of the hole and when you cover the roots use that soil first.

You will get wonderful results by putting in one or two pounds of bone dust mixed with the top soil, when planting. This gives the tree the vigorous start so necessary to make a good growth the first season. Make a smooth cut on all the main roots before planting and remove all broken parts of roots.

For most varieties of pears a distance of 20x20 feet will give very satisfactory results. For commercial planting use one-year whips, grafted on either the French or Japan seedlings, preferably the French, as the root system on the French pear seedlings seems to be better adapted to our soils. After planting cut back to eighteen inches from the ground as a low head will give better results and be easier to manage than the high-headed tree.

After you have your orchard planted,

While this article on successful growing of pears was written by Mr. Harmeling primarily for growers affiliated with the Western Washington Horticultural Association, most of his instructions and suggestions apply in any district where pears may be grown. His pointers on varieties, planting, spraying and fertilization may well be studied by every grower interested in pears. The article is especially to be approved for its condemnation of slipshod, haphazard practices. There is little place in the fruit industry, the writer points out, for the man who picks and sells his crop and then thinks to "go to sleep until next season's crop hangs on the trees."

seed the ground to oats for three or four years. The trees should be in bearing by this time, so all you will have to do when the pears are ripe is to pick 'em, sell 'em and go to sleep until next season's crop has matured. At least that is the method followed by too many would-be orchardists. If you can't take proper care of your orchard after it is planted, for pity's sake don't plant.

A very successful method for the care of the young orchard is to intercrop it the first three or four years. Strawberries planted between the rows have proven very successful, as this gives the trees absolutely necessary cultivation while they are young. After the berries are out you can safely seed the ground to clover or vetch which would be plowed under when mature. By plowing under a clover crop every other year, or a vetch crop every year, the trees will have enough fertilizer to produce and mature a good crop. Use commercial fertilizer if it seems necessary, but by the constant use of legume cover crops the trees will ripen all the fruit they should hold.

By seeding spring vetch about the first of October, it is ready to plow under about June 1 to 15 while there is still plenty of moisture in the soil. After plowing, disc every two or three weeks, the more the better. Seed again in October and repeat. This plan will bring results that will again pay well. I have found that whenever a good legume crop, especially red clover, is turned under any subsequent crop will grow and bear well.

WHAT varieties of pears are best adapted to the Puget Sound district? Practically any variety of pears will grow and bear in such natural pear districts, but

before making a selection of varieties it is a good plan to study local markets. Plant what the public will buy. Do not plant too many varieties. It is much easier to market 100 boxes of one variety than 100 boxes of ten varieties. Confine yourself to not more than four or five varieties.

As long as canneries operate the summer Bartlett will be in demand. While the cannery prices for Bartletts are not high the Bartlett is a sure bearer and, for commercial planting, it should figure largely in the pear orchard.

My next selection, I think, would be the Comice. The trees make a good upright growth, are good annual bearers and when picked and ripened properly are a delicious pear, always in demand. The Beurre Bosc will stand a good chance of coming next in line. The trees are vigorous, somewhat straggly in growth and good bearers. This pear is free from scab and other pests and of the finest flavor and color, the dark brown skin making it a pear that finds a ready market.

Should the Beurre de Anjou come next? While the finest in quality the Anjou is a shy bearer, the trees not coming into full bearing until ten or twelve years old and then, as a rule, bearing every other year. If I had a piece of good ground sloping to the north I would plant the Anjou. I feel sure that the reason so many do not have success with the Anjou lies here. They bloom so very early that if not caught by frost it is usually raining and cloudy during their blooming period and the blossoms are not pollinated. By planting then on the northern slope they will be retarded at least a week or ten days and the prospects for a crop are then good. The finest crop of Anjous I have ever seen was produced last year on eight-year-old trees planted on a northern slope. Practically all other Anjou crops were a failure.

There is room for prolonged discussion on what varieties to plant so let's not plant too many.

Prune the trees each year and every year. Start with a low head and not more than five branches. This gives the tree a strong frame-work. Do not be in a hurry to get the trees way up in the air, but cut back each year, leaving 12 to 18 inches of the current year's growth. Prune so the trees grow upward and outward leaving an open center. Each variety of pear tree has a different way of growing, some, like the Bartlett, with its stiff upright growth, and some like the Winter Nelis with its sprawling crooked limbs.

It is well, if possible, to have an expert prune the trees the first three or four years to give them the necessary frame and shape.

(Continued on page 19)

Effects of Miscible Oil Sprays

By C. C. VINCENT,

Horticulturist University of Idaho, Moscow

Probably no article BETTER FRUIT has published in several months attracted more comment and attention than that in the March number by J. R. Parker, summarizing a series of tests in Montana with various miscible oil sprays. Because it throws additional light on the subject this paper by Professor Vincent is presented at this time. It is hardly to be denied that certain elements of danger attend the application of these sprays. The sooner orchardists learn the what and when of those dangers the better it will be for both the makers and users. The practical value of the oil sprays has been widely established. There is no deprecation of this value in presenting the dangers the Idaho horticulturist seems here to have disclosed.

EVER since introduction of the San Jose Scale into the United States it has been one of the most formidable insects that the fruit grower has ever encountered.

Control of the scale is still a serious problem. Its introduction in our state, however, has taught the fruit growers many valuable lessons. The most progressive growers soon learned the value of spraying and they were ever on the alert for better spray mixtures, better machinery and more effective methods of control.

The lime-sulfur solution therefore became the standard spray for the control of the scale and it was not long until practically all of the growers were using either the commercial solutions or home-made concentrates. In 1919, however, for some unknown reason these solutions failed satisfactorily to control the scale, the growers in many cases sustaining a loss of from 25 to 50 per cent of their fruit.

Various reasons were assigned for the tremendous loss, the principal one advanced by the growers being the poor quality of the lime-sulfur. Professor A. L. Melander, entomologist of the Washington State College, believes that certain strains of the insect have developed more or less resistance to the action of lime-sulfur. He has also found that oil sprays are more destructive than lime-sulfur and recommends them in those districts where the lime-sulfur failed to give satisfaction.

In our own experiments, which were conducted in the Lewiston valley, covering a period of three years, we found that the miscible oil sprays give slightly better results than the lime-sulfur, the efficiency

ranging from 94 to 99 per cent. These applications were made in early spring, just as the buds were beginning to swell.

WHAT ARE MISCIBLE OIL SPRAYS?—Miscible oils may be defined as emulsions or preparation of oils readily mixing with water. According to a recent government bulletin, "they are composed chiefly of a mineral oil emulsified with a soap usually made from a vegetable oil and an alkali. In a miscible oil the mineral oil is subdivided into many minute globules and, when mixed with water, the oil is evenly distributed throughout the water. The safe use of the miscible oils is thought to be largely dependent upon the relative fineness of these particles."

To prevent recurrence of the 1919 loss, the growers decided to use a miscible oil spray as a clean-up spray in their orchards. The general plan was to make the application in the fall, followed by the regular lime-sulfur solution in the spring. This plan was generally accepted in view of the fact that experiment station men have from time to time recommended two applications, one in the fall after the leaves had fallen, and the other in the spring as the buds were swelling. However, owing to the rush of work the majority of the growers failed to make the full application.

EXPERIMENT CONDUCTED—One grower, however, started two spraying crews on November 25, 1919, in a block of Baldwin trees using the insecticide at the rate of

one gallon of the oil to fifteen gallons of water. This block of trees had been planted during the late winter of 1910-11, directly along the bank of the Clearwater river, on rather poorer soil than most of the balance of the orchard.

The trees, however, had made a good growth each year, and at the time of spraying were in a good physical condition. This block of Baldwin trees were selected for the experiment in view of the fact that a heavier infestation of scale was noticed on the fruit at harvesting time, than in other parts of the orchard.

The manager of the orchard had instructed his foreman to spray in eight or ten rows from the river, and in order to do so, the river curving outward, he jogged in and out from row to row in a very clearly defined pattern. Therefore the area covered was very easily distinguished by the appearance of the trees after spraying. The two outfits worked the entire day, spraying in all, over 600 Baldwin trees.

CLIMATIC CONDITIONS—The weather bureau reported for the day a maximum temperature of 40 degrees and a minimum temperature during the night of 29 degrees. The weather turned cold the next day so spraying operations were discontinued. This was followed by a heavy snow storm.

(Continued on page 27)



Northern Idaho orchard where late fall application of miscible oil spray, followed by severe cold weather, produced much damage. Unsprayed trees are shown in background.

Merits of the Black Raspberry

By W. S. BROWN

Chief in Horticulture, Oregon Agricultural College, Corvallis

AS YET the growing of the black raspberry is confined to comparatively few sections, but is undoubtedly worthy of more attention. It makes a splendid product for the table in any one of several different ways: the fresh berries are fine either for sauce or pies, the black raspberry when properly canned, is one of the richest and finest flavored sauces that can be obtained from fruits. It lends itself especially to the making of excellent jams, and dries to the best advantage of any of the small fruits, drying out from 20 to 25 per cent of its fresh weight.

The blackcap is easily cared for and requires less hand labor than many of the other small fruits. On the whole, this industry should be encouraged by being more widely advertised. When the merits of the black raspberry begin to be known to the average housewife in Oregon, prices of this delicate and delicious fruit will increase. The statement is often seen in literature bearing upon bramble fruits, that the black raspberry does not produce as well on the Pacific coast as does the red raspberry.

This is true, as a general rule, but when careful selection is made of soil and slope, coupled with good cultivation, careful pruning and protection against pests and enemies, and when in addition, the fertility of the soil is carefully maintained the blackcap will regularly outyield the red raspberry. In the east the black raspberry is regularly counted upon to outyield the red raspberry.

In a state which has been growing small fruits successfully for so many years we are safe in recommending four or five leading varieties that have proved themselves especially good. From time to time, many varieties are brought forward, some of which have considerable merit, others of which will not do well under our conditions. The best thing for the grower to do is to try a few of these many varieties as a local experiment on his own place, and couple with the information he obtains any further advice he may get from the state experiment station or from other growers who may have grown and tried out the variety in question.

Varieties recommended are as follows:

EARLY TO MID-SEASON

Plum Farmer—Vigorous, healthy and productive.

Munger—Moderately vigorous, productive.

Cumberland—Strong grower, healthy and productive.

LATE VARIETIES

Gregg—Vigorous and productive, but somewhat tender to cold, and somewhat crumbly for a canning variety.

Of the four varieties mentioned the Plum Farmer and Munger are the leaders in some sections of the state, while the older varieties, Gregg and Cumberland, lead in other sections.

Purple canes are crosses between the red and black raspberry. The best of the purple canes are undoubtedly the Columbia and Schaffer. The growing of purple canes should be encouraged in some sections, especially those near large fresh fruit markets.

The black raspberry requires a deep, rich, cool, moist soil, very well drained. When sufficient water can be added by irrigation, the black raspberry will do its best on sandy loam soils. Under Willamette valley conditions, however, the plant does best on a light friable clay loam that is fairly retentive of moisture. Under no conditions should the black raspberries be planted on poorly drained tight clay loams. They will soon die out and will be unprofitable from the start.

The slope should be to the north, preferably, because the black raspberry should be kept from being shriveled up from the heat of summer and becoming too seedy. The north slope is cooler and can be kept more moist. In some sections north slopes have deeper soils than do south slopes. Good air drainage is necessary also to protect the plants against winter killing, and to avoid damage from late spring frosts.

THE MORE humus the soil contains the greater will be its water-holding capacity. There is nothing that fills the bill better in this respect than stable manure containing more or less straw. The cover crops make a very good substitute for stable manure, especially if a leguminous crop is grown. Oats and vetch sown together in proportions of 30 pounds of vetch to 20 pounds of oats, and then plowed under as soon as plowing season arrives in the spring makes a very satisfactory cover crop.

In western Oregon careful and frequent cultivation must be resorted to if the moisture content of the soil is to be conserved. This means a frequent shallow cultivation rather than deep cultivation, because the roots of the plants are relatively shallow, and if the cultivating tools are set deeply more harm may result by cutting off roots than good may be accomplished by the cultivation. Most commercial plantings are set 4x8 feet so as to permit thorough work either with horses or tractors.

It is coming to be generally understood by the growers of all kinds of small fruits that if the soil is not rich enough for the fruit they must supplement the fertility of the soils in one form or another if they are to get maximum results.

The best treatment for the berry patch is to give it a liberal dressing of stable manure the year before planting. If 10 to 12 tons of manure to the acre can be worked into the soil throughout the fall preceding planting in the spring, the growth of the vines is usually such that by the second year there is quite a crop upon them, whereas, if the vines are not fertilized, it is usually the third season before they produce berries sufficient to pay for harvesting.

In case stable manure is not obtainable, commercial fertilizers combined with green manures are often profitable. It is a fact that the nitrogen content wears out fastest in the soil. Hence, the job of the fruit grower is to build up the nitrogen content so that he will get a well balanced ration of nitrogen, potash and phosphoric acid. He will know when this is accomplished by the vigorous appearance of the leaves and shoots. As a rule, we have enough phosphoric acid and potash to provide for ordinary yields, but if maximum yields are produced, they can only be brought about by increasing the nitrogen, phosphoric acid and potash in a sort of balanced ration in the soil.

In other words, it will do you little good to increase the nitrogen application beyond a certain point, unless the plant also has enough phosphoric acid and potash to build into its tissues, to balance the nitrogen. The berry fertilizers put out by fertilizer companies are usually good when maximum production is wanted. If one chooses to make up fertilizer, he can do so by using a formula of 4 per cent nitrogen, 8 per cent phosphoric acid and 2 per cent potash.

Tent Caterpillars

TENT caterpillars may be present in unusual numbers the coming season, according to the entomologists at the Oregon Experiment station, who have been making field observations. Gathering the egg masses and burning the nests with a torch are still the most satisfactory methods of control for this serious insect pest.

Egg sprays have not been practical as a rule and while lead arsenate at the rate of 3 pounds to 100 gallons is effective against the newly hatched worms, these are not usually noticed until they are partially grown when spray even twice that strength kills but slowly.

Tent caterpillar eggs occur as small compact rings on twigs and can be easily cut out without damage to the tree. These egg masses may be destroyed, but a better plan is to place them in a barrel or other container over which a screen is tacked. High parasitism exists in the eggs and these parasites are an important factor in control. They escape through a screen when the eggs hatch and attack caterpillars left in the trees. Burning the nests with torches should be done after dusk.

In the passing of David S. Lake, president of the Shenandoah Nurseries, whose death occurred in February, this country lost a horticultural leader of remarkable ability and achievement. Dying at the age of 74, he had for 52 years been in the nursery business, most of the time at Shen-

andoah, Iowa. Through indomitable energy and integrity he built up this business until it became the chief industry of his city, known wherever nursery stock is sold.

In order to spur interest in the annual Land Products Show to be held in Port-

land next fall, advance premium lists have already been prepared and sent out.

I am renewing for three years more of BETTER FRUIT. Would be lonesome without it.—Ralph Burdick, White Salmon, Wash.



Some Practical Notions About Buying Farm Machines

THE growing season is well under way, six million farmers are out in the open, remodeling the great fertile world, and *you* are probably confining your attentions to the fields out of which your own profit must come.

Ahead of you is a summer of activity, and your plans will have much to do with farm machines. This summer you may invest in a number of such items of practical equipment as are listed at the right. You will be deciding what machines will increase your production, save you the most, and cost you least in the long run. Each purchase will lay a bit of the foundation for coming seasons.

Each new machine must be a good, reliable worker and moneymaker for you during years to come. It has been proved many times that one defective, inefficient machine may in one season tear down the profits built up by good tools and hard labor. Your choice in each case is no light matter for there are wide variations in value.

It is not for selfish reasons alone that we ask you to consult with the McCormick-Deering dealer in filling your farm equipment needs. The plainest sort of common sense, a long unbroken record of accomplishment, the ripe judgment of millions of good farmers—all considerations point to the same advice:

Rely on the good design and quality construction of the equipment in the **McCormick-Deering Line**. Invest in Titan and International tractor power to work smoothly with McCormick-Deering belt and drawbar machines. Count on the full stocks, the ready service, the help and advice of our dealers. The **McCormick-Deering Dealers** are in business for your trade, but they are also working to gain your good will and confidence in the years to come.

These
McCormick-Deering
Products are in Demand
in Summer and Fall:

- Tractors
 - Titan
 - International 8-16
 - International 15-30
- Grain Binders
- Push Binders
- Headers
- Harvester-Threshers
- Mowers
- Rakes
- Loaders
- Hay Presses
- Corn Binders
- Corn Pickers
- Ensilage Cutters
- Huskers and Shredders
- Shellers
- Grain Drills
- Plows
- Tillage Implements
- Cane Mills
- Feed Grinders
- Stone Burr Mills
- Threshers
- Potato Diggers
- Wagons
- Engines
- Cream Separators
- Manure Spreaders
- Motor Trucks
- Twine
- Repairs

McCormick-Deering
Dealers Offer You
Reliable Tractors and
the Best-known, Most-
complete Line of Trac-
tor-operated Equipment
in the World.

INTERNATIONAL HARVESTER COMPANY

CHICAGO OF AMERICA USA
(INCORPORATED)

92 Branch Houses and 15,000 Dealers in the United States

Pruning and Training of Grapes

By R. T. REID
Bellevue, Washington

COMMERCIAL grape culture in the United States received a tremendous impetus upon introduction of the Concord about the year 1853. This continues to be the leading variety of the American grape (*Vitis Labrusca*) grown in the United States.

Prior to 1853 a few vineyards of native grapes and hybrids of the American and European (*Vitis Vinefera*) had been planted, the fruit being grown principally for wine. Of these grapes the Catawba appears to have been in highest favor and still is considered one of the best varieties.

The methods of pruning and training in these early days were patterned after European methods and it was doubtless due largely to this that the growing of the grape commercially had been only partially successful.

A few years prior to the introduction of the Concord an accident occurred in a small vineyard in the Hudson River Valley owned by William Kniffin, a stone mason, by which one of his vines was badly broken, most of the old branches being stripped from the vine. It was thought the vine was ruined, but as the season progressed it was found that the fruit of this vine, which was borne on shoots from canes one-year-old, was of superior quality and the yield as good as that of vines that had sustained no injury.

Fortunately, Mr. Kniffin was a keen observer and, desiring to prove the correctness of his guess as to the cause of the phenomena, pruned other vines next year in much the same way the injured vine had been pruned by a falling tree, with equally gratifying results.

These experiments resulted in establishment of the American high renewal system, popularly called the Kniffin system. This, with modifications to suit the personal preferences of individual growers, or the habits of certain varieties, may be said to

have become the standard system wherever American grapes are grown.

Pruning and training are terms which are frequently confounded when speaking of the grape, but in reality, represent distinct operations. By pruning we mean the removal of certain of the branches, with the object of obtaining a larger quantity and better quality of fruit from those remaining. Training refers to the disposition of the different parts of the vine.

It is true that different methods of training demand different styles of pruning, but the modification is only such as adapts a particular system to the external shape and size of the vine and does not in any way affect the principle upon which it rests. Pruning is a necessity and, in essence, there is but one method. Training is a convenience and there are as many modes as there are fancies among grape growers.

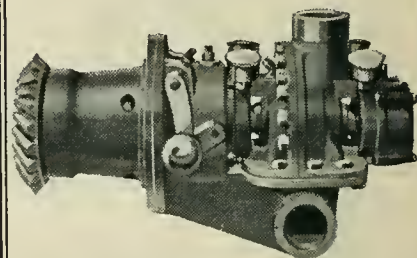
All intelligent pruning of the grape rests upon the fact that the fruit is borne in a few clusters, usually two or three, near the base of the growing shoots of the current year, which spring from wood of last year's growth. Unless this fact is borne in mind and a system of pruning adopted that will be in harmony with it, the grower is sure to be disappointed in the quality of the fruit and, to a greater or lesser extent, in the quantity produced.

Since most of us are engaged in the business of horticulture for profit and not alone for the pleasure it affords, it is important that we select a method of pruning that will produce satisfactory results, with the minimum cost of time and labor in training. In other words, a system is needed that renders training practically unnecessary.

IN A STUDY of the grape it is important to know the names by which the various parts of the vine are known; namely, the trunk, the branches, the cane, the spur and the shoot. The shoot is the leafy branch

Spray With Your
Fordson Tractor

**FASTER
BETTER
CHEAPER**



**Northern Spray Pump
Attachment**

**25 Gallons Per Minute, 300 lbs.
to 500 lbs. Pressure, 5-Year
Guarantee**

A Northern Spray Pump Attachment and Jet Agitation System enables you to tractorize your horse drawn sprayer, cuts the time required for spraying in half, does much more effective spraying because of the high pressure it gives, and saves, not only one-half of the labor cost, but a considerable part of the spray solution also.

Five-Year Guarantee

We guarantee to replace free, any Northern Spray Pump used in the Northern Spray Pump Attachment which wears out through ordinary use, shows objectionable corrosion or breaks, under regular spraying conditions within five years from the date of sale.

Write for Full Information

Our catalog explains this marvelous new pump, the pump that has revolutionized city water works pumping and fire-fighting apparatus. Write for it today.

Northern Fire Apparatus Co.
Dept. B. F., Minneapolis, Minn.

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

of the current season's growth that bears the fruit. The cane is a shoot in its second year, from which bearing shoots of the current year spring. The branch is a cane more than one year old. The spur is a cane cut back to a short stub, usually having but a single bud, while the trunk is the permanent part of the vine leading directly from the root.

The principal objects sought in pruning the grape are: Free circulation of air; admission of light into the interior of the vine; provision of shade for the growing fruit, that it may not be scorched by the direct rays of the sun; protection of the fruit from rain and frost by foliage; admission of the sun's rays to the soil upon which the vine is growing, and the limitation of size of the vine to its allotted space.

The four-cane Kniffin, high renewal system of pruning is recommended as best suited to the varieties found adapted to the soil and climate of our western Pacific slope. This consists simply in selecting two or four shoots that spring from the canes near the trunk for the canes of the next season, and cutting all other growth away.

Two of these shoots are then tied loosely to the top wire of the trellis and two to the second wire, being cut back at the time to from five to ten buds each. The shoots for the second wire would naturally be selected at a point on the vine below those intended for training to the top wire. If the vine is not strong only two shoots may be retained and the number of new shoots limited by cutting them back to a lesser number of buds.

To restrict spread of the vine, spurs may be made of shoots springing from the trunk and the shoots that spring from these are then selected for canes the following year. As all of the shoots are at a height of from three to five feet from the ground there is little need of training the new shoots which have a tendency to grow downward, due to the weight of foliage and fruit.

If it is found that such shoots interfere with cultivation during the latter part of the season, the ends may be cut off or they may be pushed back under the trellis and held in place by short stakes. All shoots that spring from the trunk and those that come up from the root should be broken off when only a few inches long, as they rarely bear fruit and tend to sap the vitality of the vine.

Date Prune Plantings

SINCE last fall approximately 100,000 date prune trees have been planted, according to a report from the Oregon Nursery Company, which holds exclusive propagation rights. The company officials have been highly gratified by the reception the new sweet prune has won for itself.

One of the late shipments of the Coates, or date prune trees, comprised a carload sent to southern Idaho for planting there. The nursery company is setting out 80 acres

Settle the Tractor Question RIGHT NOW!

Arrange for a **FREE** demonstration of the

Fordson

Reduction of \$230 Puts this All-Purpose Power Unit within the reach of everyone!

THE DEALER NEAREST YOU
Will gladly arrange to demonstrate the Fordson—free of charge—if you but fill out the coupon below, and mail it to the Northwest Ford Dealers.

What Fordson Does

Plows, Harrows, Threshes, Grinds Feed, Fills the Silo, pulls Stumps.

Grades Roads, Snakes Logs, Does Draw Bar and Belt Work of all kinds.

Runs Portable Mills, Cuts ties, Pumps water.

And does many other things requiring **POWER** in abundance—and at **LOW COST.**



\$395
F.O.B. Detroit Sign, Clip and Mail the Coupon

NORTHWEST FORD DEALERS
Dept. B, 700 Fairview Ave., Seattle
Dept. B, East 11th and Division Sts., Portland

Please send me free information on Fordson Tractors. (Mark X in square opposite literature or service desired.)

Fordson Tractor Manual
 The Fordson at Work
 Free Demonstration. (State purpose for which tractor is intended.)

If you own a tractor, state what make

Name

Address

of the trees in the vicinity of its headquarters at Orenco. Even more extensive plantings are expected next season as scores of interested land owners who were unable to complete preparations for setting out an acreage this season will do so in the coming year.

The company reports that there has been excellent demand for all sorts of trees with "all lines cleaning up very satisfactorily." The demand in some lines has, in fact, exceeded the supply.

The special gift boxes of prunes put out by the Washington growers last season met with great favor and many repeat orders have been received.

THE FIRST few hours of a baby chick's life it is very sleepy. It has been through a severe strain getting out of the shell and it needs a rest.

VALUABLE TO TEACHERS
*Massachusetts Agricultural College,
Department of Education
Amherst, Mass., Feb 4, 1922.*

BETTER FRUIT,
Portland, Oregon

DEAR SIRS: Our copies of BETTER FRUIT are placed on the tables of our teacher training study room for careful examination and discussion, in order that when these teachers in training go out into real work they may make wise selections for the boys whom they teach in the agricultural departments and special schools.

Very truly yours,
W. S. WELLES
Professor in Vocational
Agricultural Teaching

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY F. MINNICK.....
.....280 Madison Ave.
JNO. D. ROSS.....608 Otis Bldg., Chicago
SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS.....
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

Oregon—H. P. Brass, Plant Pathologist, Corvallis; A. L. Lovett, Entomologist, Corvallis.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tucson.
MONTANA—H. Thornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance; three years, \$2; five years, \$3. Canada and Foreign, including postage, \$2.00, payable in American Exchange

Advertising Rates on Application.

VOL. XVI, NO. 11

New Development Plan

An inspiration of leaders in Wasco county, Oregon, has led them to form a new development body that will work from a new angle. Details of the proposal are sketched in other columns of this issue.

The plan involves co-operation of city and country interests in maintaining what is known as the Agriculture and Horticulture Bureau. As manager of this bureau, has been selected an expert whose chief duty is to be that of advising land owners on the planting of new acreages. In this way there is to be concentration not only on the proper sorts of fruit, but on the best adapted varieties as well.

Advantages of this plan of organized and co-ordinated plantings are so obvious as to need no emphasis. The plan solves a lot of the problems pertaining to production and marketing of berries, fruits and vegetables. For such reason alone it is worth no little effort and expense and a lot of patience.

The bureau plans no blatant boosting of the district through fancy pamphlets or red-ink advertising. That more settlers are wanted and can be accommodated, the bureau promoters admit. To these, of course, is promised opportunity for profitably engaging in the production of fruits and kindred crops. But the mission of the bureau is conceived to be that of co-operating with the settler to the end that he may be successful, rather than that of luring a large number to chance success with unguided efforts.

Operation of the plan is already proving a stimulus to development. Ranchers of the district, backed by expert guidance and assured of improved marketing facilities, are clearing and planting new acreages. If the bureau but survives and "carries on," the district seems assured of more rapid development and greater prosperity.

The Wasco idea may well be watched and—if but reasonably successful—copied by other districts.

Cold Storage Needs

Portland very much needs a cold storage unit in connection with its port facilities. Obviously, we take no pride in giving publicity to this fact. It is cited in the hope that all interests concerned may become fully alive to the need; that, for the good of thousands of fruit growers in tributary territory, the need may be filled.

As every reader knows, the past season witnessed a remarkable increase in water shipments of fruits of the Pacific Northwest. We think every reader, sizing up this development as we do, feels sure the transportation of our fruit over water routes will become more and more extensive.

It is to be hoped then, that every reasonable facility that will aid in this more economical distribution of fruit products may be provided. Practically all port bodies of California and our two northwestern states have provided cold storage

facilities as a part of their equipment.

By those who have made the surveys and attacked the problem for the Columbia Basin district, it is said the Portland Dock Commission originally stated that it had funds and stood ready to provide adequate cold storage units if the need were shown. Now, it appears, the need seems pretty clearly proven, but the commission is said to report a lack of funds for the purpose.

Fruit men are more than a little concerned over the situation, as seems only natural under the circumstances.

Apples \$1 Apiece

A Chicagoan, traveling in Turkey, discovered that his hotel in Constantinople had a box of Oregon Delicious apples. On ordering one for breakfast he found them "so delicious" that he repeated the order each morning during his stay at the hotel.

When the traveler came to pay his bill he found that he had been charged 24 piasters per apple, or virtually \$1 apiece

The Chicagoan might well lay claim to having paid the highest price on record for Oregon apples. Instead of making this boast, however, here is what he wrote a friend in relating the experience:

"I was perfectly satisfied, as they were about the best thing I tasted on that trip."

Most assuredly a testimonial worth framing!

Poor Economy

Hood River County has lost a capable and valued fruit inspector because the commissioners thought it necessary to cut the salary from \$3100 to \$2400 a year. It may so happen that no serious consequences will result. The commissioners may be fortunate in finding a man of integrity and experience at the lower salary. Most of the growers of the county seem to think the infinitesimal saving on their taxes may be lost through less efficient inspection service.

Berries for Canning

By J. O. HOLT

Manager Eugene Fruit Growers' Association

THE northwest has become the berry patch of the United States, and the Willamette Valley seems to be a favored center of that berry patch. It is fit for all kinds of berries. We have a good berry country around Eugene, but it is limited as regards red raspberries.

We want nothing but the Cuthbert red raspberry for canning. It has a habit of growing singly and sometimes does not produce as much as the others. I like to grow blackcaps because I can pick them by the handful. We have some that used to bear very well—Shaffer and Columbian. They were on strong clay soils, but might be a better bearer. Don't go into them strongly on a canning proposition.

As to the blackcaps, I think the varieties named are good for canning purposes with the exception of the Gregg. The Gregg crumbles under various conditions and makes a poor looking product. The Kansas, the Plum Farmer, which in my opinion is a Kansas, is a good berry, and the first year or two I found the Cumberland an excellent berry, but they become small and have no bloom. It makes a beautiful berry. The Munger is all right from the canning standpoint.

We raise only a few red raspberries in our country. In 1910 we had only 7000 pounds. In ten years they have increased to 108,000 pounds. I presume they have increased in other sections of the country in about the same proportion. In ten years the cannery price has increased from four cents to eight and one-half cents last season.

Our logans have increased in ten years from 15 tons to 340, and the price in 1911 was three cents and last year it was five cents. The evergreen blackberry has had

a constant growth with us. We began canning in 1911, paying two and one-half cents; this last year we canned 614 tons—one and a quarter million pounds and paid five and one-half cents.

The number of berries going into barrels is increasing, and would increase more rapidly if people knew more about how to handle them and had the facilities to do so. Berries to be put in barrels should be put in the same day they are brought in and put right into the freezer.

As we go on, we are using less sugar and putting more barrels into storage, without sugar at all in them. Simply putting the berries in, filling them within four or five inches of the head, heading them up and

freezing them immediately. This is one of the cheapest ways of handling them.

Overhaul Prune Drier

Now is the time to get the prune drier in shape for next year's run. All of them need cleaning up before using again and most driers will be benefited by increasing the circulation through allowing more air in the furnace chamber. Holes one foot square and at one-foot intervals around the entire base of the drier will create more rapid drying. The throat of the furnace chamber leading the the tunnels should be widened so that a hole at least four feet in width is obtained.

THE UNITED STATES PRINTING & LITHOGRAPH CO.

ATTRACTIVE
FRUIT CAN FRUIT BOX
LABELS

EVAPORATED FRUIT
DRIED FRUIT

CARTONS

WINDOW DISPLAYS POSTERS

*Write or telegraph for
samples, prices and ideas.*



MYERS HAY UNLOADING TOOLS



A GOOD Hay or Grain Unloading Outfit saves the cost of one to three men each day of harvest. Myers Hay Tools have been THE STANDARD FOR 50 YEARS. Sturdy construction, patented features, low price, make them the biggest-value made. Also a complete line of Pumps and Door Hangers. See your dealer or write us for booklets. (16)

THE F. E. MYERS & BRO. CO.
135 Church St., Ashland, Ohio

Pacific Northwest Distributors

Mitchell
LEWIS & STAVELAND

Spokane, Washington Portland, Oregon
Buy From the Local Mitchell Dealer

COLOR PRINTING HEADQUARTERS

HOGE BLDG.
SEATTLE

112 MARKET ST.
SAN FRANCISCO

New Potato Bulletin

"Potato Diseases in Oregon and Their Control," is the name of a 52 page bulletin just off the press and ready for free distribution. This bulletin by M. B. McKay, associate plant pathologist at the Ore-

gon Experiment station, gives general control measures for all potato diseases common to Oregon with a discussion of each separate disease. This is a popular bulletin written in plain language.

TELL THE advertiser you read his ad in these columns.

Your paper is good. Keep up the good work and keep it coming to me.—Ross F. Mayer, Granger, Wash.

▲▲▲

You had some excellent publicity in the January issue for new settlers.—William Sitter, Kettle Falls, Wash.

Economy

There's only one Caterpillar Holt builds it

lowest cost per horse-power hour is record of

CATERPILLAR

T-35 TRACTOR

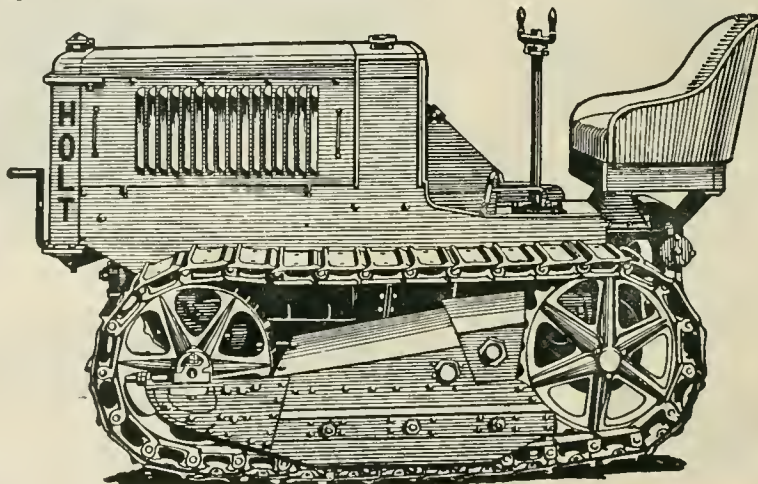
"Caterpillar" T-35 Tractor is not designed or built to meet a price. It is built to maintain the high and exacting standards of "Caterpillar" performance—dependable, economical, trouble-free service.

In the "Caterpillar" T-35 Tractor there is greater economy, greater value—by every test and measure—in dependability—in long life—in low operating costs—in negligible repairs—in capacity for work—in uninterrupted field service and in every other way. "Caterpillar" T-35 Tractor was not offered to the public until it could meet these value-tests.

This Tractor is ideal for small farms, vineyards, berry fields, road patrol work, hauling and general contracting. It also is a handy supplement to the power needs of big farms. Its utility as a tractive power unit is supplemented by its ability to handle scores of belt jobs: pumping, grinding, sawing and other stationary work. A factory and a service organization on the Pacific Coast assure service any time, anywhere. Write at once for full information.

THE HOLT MANUFACTURING COMPANY

Stockton, Calif. Peoria, Ill.
Los Angeles, Calif. San Francisco, Calif. Spokane, Wash.
Oregon Representative, J. W. Hill, Henry Building, Portland



Walnut Pest

THE walnut-husk maggot (*Rhagoletis suavis Loew*), long known as a disagreeable inhabitant of the hulls of the native black walnut in its eastern range, has demonstrated its versatility by attacking in like manner the English or Persian walnut wherever grown in the East. Some of the infested nuts drop prematurely, whereas others hang to the trees.

The injury to English walnuts is three-fold since it impairs the quality of the kernels, causes the husk to stick to the shell and blackens and soils the shell, making the nuts unattractive for market.

Spraying with lead arsenate one and one-half pounds to 50 gallons of water resulted in only 4 per cent infestation at harvest time against 60 per cent unsprayed the previous year. Such treatment, however, cannot be recommended as a positive control as the flies succumb very slowly to the effects of this poison.

It is of interest to note that this pest is a close relative of the well known apple maggot, or railroad worm.

A preliminary report on this walnut pest, recently has been issued and may be had on application to the Federal Bureau of Entomology, Washington, D. C.

Loganberry growers of Lulu Island, near Vancouver, B. C., recently formed an association.

The government experiment station at Sitka, Alaska, is experimenting with new varieties of potatoes that may be adapted to conditions in Alaska.

Tests in Curbing Melon Pests

(Continued from page 6)

or those receiving applications of three pounds of powdered arsenate of lead in 50 gallons of water applied with an engine power melon sprayer, were nearly destroyed. Several melon patches were dusted in comparison with the fields sprayed with power sprayers and in no case was this strength of liquid material able to control the beetles, which were unusually numerous last season. In every case the power sprayers were abandoned in favor of dust in order to save the fields.

The hold-over protective time was

greatly lengthened when 5 per cent of arsenate of calcium powder was mixed with a 10 per cent nicotine sulfate dust, since the nicotine dust is very volatile and appears to lose its killing power against these beetles after a very few seconds, under field conditions.

Since these nicotine sulfate dusts as reported by the government were not manufactured east of the Rocky Mountains

POND PRODUCTS

(Nation-Wide Distribution)

Prop-hooks, Screw-eyes, "Centipede ladders," Thinning Shears, other horticultural devices. Circulars on request.

Russell G. Pond

Parkdale (Hood River) Oregon.

The Importance of Proper Moisture Content in Boxes

BOXES made from seasoned lumber are many times stronger than boxes made from green lumber. They hold nails and they stand the test of storage.

A properly seasoned box means safety and protection for your fruit. An improperly seasoned box leads to loss from loosened nails and rough handling in shipping.

Exhaustive tests by the United States Government show that 12 to 15 per cent is the proper moisture content for box shooks. That is the standard of sturdy Westpine boxes. It is maintained by rigid inspection.

All lumber that goes into Westpine boxes is thoroughly air dried under the atmospheric conditions in actual service. Westpine boxes never require re-nailing.

To be sure your boxes have the proper moisture content which means strength, safety and protection buy tested and inspected Westpine boxes.

Write today for further information

Box Bureau, Western Pine Manufacturers' Association

510 Yeon Building, Portland, Oregon

**WESTPINE
WOODEN BOXES**



Thinning
Shears

Ladders

Picking Bags

The Hardie Mfg. Co.

55 N. Front St.,
Portland, Ore.

they could not be used extensively in the Mississippi valley. It was necessary, therefore, to recommend other materials to be universally used by the growers for the 1921 crop.

Although a 4 to 7 per cent strength of nicotine sulfate dust is ordinarily recommended for the control of melon aphid, only the 10 per cent strength was used since the beetles were the main problem. One of the outstanding advantages of using a nicotine sulfate dust against the cucumber beetles is that aphid will be controlled incidentally and save purchasing separate strengths, as some years aphid are not a factor. More aphid were killed with nicotine sulfate dust than when we used liquid nicotine sulfate soap solution in power outfits, using six-foot extension rods and angle nozzles.

ARSENATE OF LEAD, PARIS GREEN, LIME FORMULA—It was also found that a mixture of 1-pound dry arsenate of lead, one-half pound Paris Green mixed with 15 pounds of hydrated or air-slaked lime, when dusted upon the plants, gave almost perfect protection against the cucumber beetles when applied every five to seven days from the time the plants appeared until beetle feeding practically ceased.

CALCIUM ARSENATE AND GYPSUM—Several commercial growers used the Ohio recommendation: One pound calcium arsenate mixed with 20 pounds of gypsum. This mixture, when applied regularly, gave fairly good protection from beetle feeding, but severe burning resulted and therefore seemed not as practical as the other dusting mixtures which gave no burning.

A few growers used "Lazal," a branded product of the General Chemical Company, and our notes show that very satisfactory control was obtained against cucumber beetles. No burning resulted when

used at full strength, nor when 5 per cent was added to "Nico Dust."

MELON ANTHRACNOSE—In the almost total absence of liquid power sprayers in the Missouri melon territory several commercial growers were advised to apply a copper compound as a dust in a good hand operated bellows-type duster. Two materials were used: Dry Bordeaux ("Orchard Brand" the equivalent of 21.82 per cent metallic copper) and dehydrated copper sulfate (Niagara product). The time of application was the same as commonly recommended for liquid Bordeaux.

The copper dusts were applied in several counties and the results were very uniform. There are apparently few or no records where copper compounds have been used as a dust for controlling watermelon anthracnose nor of the tolerance of this type of plant to various forms and strengths of copper compounds.

Accurate records were kept for one field which contained 150 rows of watermelon plants set 10x10 feet with 32 hills to the row. Eight rows received but two applications of one pound dehydrated copper sulfate to each four pounds of lime, the regular second and fourth applications as recommended in United States Department of Agriculture, Department Circular 90. An average count of the eight rows at two pickings showed a total of twelve melons with an average of one lesion per melon. Nine rows were used as checks against the eight treated rows and a count at two pickings showed an average of 24 melons per row too badly diseased to make lesion counts.

DRY BORDEAUX AND LIME—Dry commercial Bordeaux manufactured for liquid spraying was used in various strengths and with different timing of applications. Two rows received for the first application equal parts of dry Bordeaux and hydrated

lime, the second application was the same and the third and fourth applications had one pound of dry Bordeaux to each one and one-half pounds hydrated lime. The two commercial pickings showed a count of only 7 melons per row which had any sign of the disease.

Four rows received Bordeaux and lime in which equal parts were used in the first application and one to one and one-half in the three other applications. By actual count an average of the two pickings gave nine melons per row showing slight lesions.

Five other rows received this material in the same strengths as the four rows previously mentioned, but the regular second application was omitted. The two pickings showed an average of 21 melons per row badly "blistered."

Eleven check rows used against the dry Bordeaux gave a count of 20 melons per row badly infected.

TREE PROTECTORS



both Perforated and Non-Perforated, both for trees and vines. Why go to the expense of buying your land—grading it—buying your trees or vines—expense of planting same and then just leave them exposed for rabbits, squirrels, sand storms, sun scald, to destroy and injure a portion of them when we can help you to save every tree. We have sold over 15 million in California in the past few years, let us also help you to get a 100 per cent stand. We make a number of kinds. Tell us your pest and we will tell you what to use. Ask for samples if interested. We also make Propagating pots, for early vegetables.

The Expan Company
Lock Box 465
Redlands, California

Follow the Violet Lines. There is Merit in the Wrapper.

"CARO"
fruit
WRAPPERS



This
is the
POINT

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED WITH BORDEAUX MIXTURE

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure.

The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process.

FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, destroy BACTERIA and FUNGUS SPORES and arrest decomposition.

United States Distributors, AMERICAN SALES AGENCIES C O., 112 Market Street, San Francisco, California.

In all cases the last application was applied to the fruit only.

The results of the copper dusting encouraged the users of this cheap method and more applications will be used next year.

With us the system of tenant farming prohibits the use of expensive power liquid sprayers and for that reason much hope is placed on the success of a dusting method. It means one man with a \$25 duster as against two to five men with a three or four hundred dollar sprayer.

On the field of 150 rows from which one and one-half cars were loaded under the association rules, only 32 rows received insect protection throughout the season and nineteen of the 32 rows received copper dust. Over 80 per cent of the merchantable melons loaded from the 150 rows came from the 32 dusted rows and over 90 per cent of the large melons (over 35-pound average) came from these 32 rows.

From our notes it is apparent that the second application (one week after first melons have "set" on vines) is the "calyx spray" of the watermelon for when that was omitted any number of applications thereafter showed little signs of checking the disease.

Pear Culture in Western Washington

(Continued from page 8)

After that the most essential thing is to prune them enough. Let the sun and air get at the fruit. Five boxes of choice fruit is much better than 100 boxes of culls.

The worst pest to contend with in the Sound country is the scab. For this, spray the trees when still dormant, about the first of March, with a regulation lime and sulfur solution, 1 to 8. This will kill all the spores left on the trees, also any scale that may be there. Spray again when the fruit is the size of small marbles with Bordeaux mixture, 4-4-50. Add one and one-half pounds of powdered or paste arsenate of lead to each 50 gallons. Spray to kill slugs and other chewing insects. Spray with the same solution in three weeks and again in three weeks. This should give you clean fruit unless the season is especially cloudy and damp. Scab thrives in mucky weather.

For the blister mite, or sometimes called the pear rust, use a lime sulfur spray, 1 to 12 or 15, and apply just before the buds open. At this time the eggs are hatching and the spray is most effective. This pest is hard to control in certain parts of the country out here, but does not seem at present very troublesome. Have you ever observed the rusty leaves of the mountain ash? It seems that possibly this mountain ash is the host of the blister mite. Maybe, if we destroyed all the mountain ash we would have no more trouble with this mite,



Horse drawn

—

Tractor drawn

—

High Pressure

—

Five Sizes

"Friend" Sprayers

Distributed in the Northwest by

Hood River Spray Company

Hood River, Oregon



<p>Musical Merchandise</p> <p>—</p> <p>Write Us</p>	<p>WE SAVE YOU MONEY!</p> <p>W. Martius Music House, Inc.</p> <p>1009 First Avenue, Seattle, Washington</p> <p>Everything Known in Music</p>	<p>SHEET MUSIC</p> <p>—</p> <p>Write Us</p>
---	--	---

but unless it becomes more troublesome let us keep our beautiful mountain ash.

Black-spot sometimes works on young pear trees when they are in a weakened condition or bruised with a single-tree. The bark turns a dark brown color and loosens from the tree. Make a solution of Bordeaux, 8-8-50, and with a brush paint the trunks and main branches thoroughly with this mixture.

PICK the pears when the seeds have turned from a white to a dark brown and when the stem breaks off the twig or peduncle readily. Don't let the fruit ripen on the tree. If the picker is not careful, many of the fruit buds, being already formed for next season's crop, will be broken off and the crop shortened for next

season. All the fruits should not be picked in one operation, as it seldom happens that all the fruit is equally developed. There is generally a difference of a week and sometimes two weeks in the time of the maturity on the same tree. Go over the trees two or three times. With a little practice you can readily tell which pears are ready to be picked. Always pick with the stems on. Handle the fruit very carefully as a bruised pear will soon rot, but not ripen.

If kept for future use or sale take them as soon as picked to the storehouse and keep them at a dry temperature of about 15 degrees above freezing until ready for market. Keep the light entirely excluded from all storage fruit. On this precaution depend the flavor, color and texture.

Most of the small pear growers have no storage room and must sell the fruit as soon as harvested, so every season there is a period with each leading variety when it becomes a "drug on the market." This is especially true of the Bartlett. Prices accordingly fall. When the market is overstocked for a few days Bartletts may sell at from 75 cents to \$1.00 a box, while in two or three weeks they may bring from \$1.50 to \$2.50 per box. A small concrete storehouse, with packing room above, will soon pay for itself.

Grade and pack carefully as a good appearance goes a long way toward a good sale and will pay big wages for the extra time it requires. Always use new boxes, as no contrast is greater than fine fruit in old dirty boxes or scabby, ungraded fruit in fine new boxes. Don't sell all your best pears, but keep a few boxes of the finest for the folks at home. I know of nothing finer to the taste than a well-ripened pear just before retiring at night.

Do not plant pears for profit just because you happen to own a piece of mother earth. While pear trees will grow on almost any kind of soil and location, it does not signify that you can grow pears for profit. Make up your mind you are going to have a good, commercially paying pear orchard and select the soil and location best adapted for the specific purpose. If you don't know, get someone who does. Then do not be in a hurry. Put the soil in good fertile condition; buy the trees from an absolutely reliable nurseryman; plant with care, and then, above all, cultivate the soil continually the first three or four years, and at least every other year after that.

In the cultivation do not try to see how close you can get to the trees without barking them. Do a little extra work with the hoe and keep the horse and cultivator away from the trees.

I planted and have done the pruning of a large pear orchard for the last five years. This last season the owner of the orchard, a city man, had a very careless teamster plow and summer fallow the ground. I have just finished pruning the trees for the fifth season, and while I am not inclined to use strong language, it was hard to refrain. Of the 1800 trees fully 100 were practically ruined, large main branches broken off at the trunk, barked down to the ground and the tops eaten off by the horses. Five hundred or more were barked on the trunk by the singletree and, altogether, the trees were in a deplorable condition. Next season someone else will cultivate or someone else will prune.

Use common sense, study local growing and marketing conditions, varieties best adapted to the soil, climate and markets, intercrop until the trees begin to bear, and there is no reason why a good profit cannot be made in growing pears.



Million Dollar Companies Sell Their Fruits At Auction

66% of the Fruits sold through the New York Auctions are sold for the account of large Cooperative organizations and million dollar concerns like the United Fruit Co.

Big organizations can afford to hire big men to select the best selling methods. And big men, like big companies, do not make many mistakes. They *know* what they're doing before they make a move.

When concerns like these sell at Auction, isn't it a pretty safe guide for *you* to follow?

If you are dissatisfied with the prices you are receiving for your fruits—if you are displeased with the service you are getting, or with the delay in getting your money, then you will be interested in receiving full particulars about our 20th-century way of handling sales. Better let us send you full particulars anyway. What's your address?

The Fruit Auction Co.

Established 1896

202-208 Franklin Street, New York City



KAYSO—the combined casein spreader and adhesive—simplifies the control of insect pests and fungus diseases. It is safe and convenient.

You can use KAYSO at a cost of substantially less than one cent per tree. Against this—count the cost in the low yield of your orchard when poor spraying methods are practised.

The casein used in KAYSO manufacture is specially pre-

pared for the purpose, properly pulverized and completely soluble.

Use KAYSO with Bordeaux-Mixture, Lead-Arsenate, Nicotinic-Sulfate and Sulfur Sprays.

Ask your dealer or write today for prices and circular.

CALIFORNIA CENTRAL CREAMERIES

425 BATTERY ST.
SAN FRANCISCO

175 FRANKLIN ST.
NEW YORK

740 TERMINAL ST.
LOS ANGELES

Wasco County's Plan

IN ORDER that greater development of agricultural and horticultural resources of Wasco County may be obtained, The Dalles-Wasco County Chamber of Commerce recently formed a bureau which has been designated the Agriculture and Horticulture Bureau. W. S. Nelson, connected for the past four years with Libby, McNeil & Libby, is in charge of the bureau.

Mr. Nelson's thorough knowledge of the cannery business well fits him for the position of adviser to those planting new acreages, in seeing to it that an adequate tonnage of each variety is planted to assure a real commercial output. This, in turn, will assure an outlet. For instance: If one man plants an acre or two of red raspberries, another strawberries, another loganberries, another peaches, another pears and still another something else, there will not be tonnage enough of any one kind of fruit to make advantageous sales possible, either to a cannery or in packed form.

Another function of the bureau will be the scientific analyzing of soils to determine for what crop they are best fitted. Through co-operative methods of city and country and the application of practical plans, greater development of areas now farmed and those undeveloped will be obtained. The ranchers are enthusiastic over the new plan and are approving it by setting out orchards on lands not now planted,

or clearing and preparing undeveloped areas within their holdings for early orchard planting.

Various tree fruits have been successfully produced in quantity and quality during past years so the land owners are well informed as to the adaptability of certain fruits to the various valleys and uplands. The gardening experience of these farmers furnishes the guide post as to the crops that can best be grown and marketed and it is upon this experience that future development will go forward without useless waste of effort, time, material or money.

There will be no printing of pamphlets, say the bureau heads, telling of glowing possibilities in order to secure immigration. While more people are wanted and needed, those that come will have the use of the bureau at their disposal and will receive thorough and reliable information and be guided by all protective means possible in securing their location and being advised as to what crops may be successfully grown and marketed. After all is said and done, the human factor is all important in development and the success of the individual is the success of all.

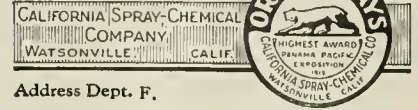
▲ ▲ ▲

BETTER FRUIT is a mighty fine magazine and I sure like to read it. I am interested in filberts at present and want to set out a grove of them.—Cicero Grimm, Aurora, Oregon.

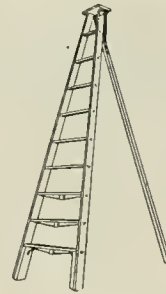
Codling Moth

This destructive pest requires utmost vigilance. Use ORTHO DRY ARSENATE OF LEAD. Uniform in strength. Mixes perfectly, and stays in suspension a long time.

Write for Ortho Circular



Address Dept. F.



Northwest Orchard Ladders

"The Quality Line"

For Sale by

Leading Dealers Everywhere

Manufactured By

Northwest Fence and Wire Works
PORTLAND, OREGON

APPLE LABELS
by attracting attention
by compelling interest
by impressing brand name
by creating the desire

**PLAY AN IMPORTANT PART IN
APPLE SALES**

SCHMIDT LITHOGRAPH CO.
SEATTLE · LOS ANGELES · FRESNO
PORTLAND · SACRAMENTO · HONOLULU
MANILA
SAN FRANCISCO

Orchard Cultivation and Improvement

(Continued from page 6)

a single element is wanting or whether two, three or none should be given to the soil.

The value of the fertilizers can ordinarily be found indicated in the growth of the cover crops or of the weeds and grasses in the orchard. Ordinarily the cover crops will respond to the needed fertilizer more quickly than will the trees, but if the cover crop shows marked difference in the way it responds to the fertilizers, it is fair indication that in time the trees will show very much the same development.

In adding fertilizer to the soil for these tests it is suggested that a good plan is to apply them very early in the spring in heavy rainfall districts, or later in the fall in the lesser rainfall districts. These materials should be cultivated into the soil soon after being broadcast on the land. All material should be carefully pulverized and scattered over the entire surface of the soil. A few tests in any section will ordinarily be a good indication of what the district may find in soil needs.

For example, so far as I have been able to learn, in the entire section of western Washington, south of Chehalis, the sandy, gravelly and light soils that have been cultivated for 20 years are most generally found to respond to the application of nitrogen fertilizer. In the northern part of Washington, I am led to believe that both nitrogen and potash fertilizer are beneficial to most of the lighter soils. Phosphorus has given encouraging results in a good many districts.

CAUTION ON COMBINATIONS—I want to caution against the combination of fertilizers such as the use of phosphorus and barnyard manure or the application of potash with the green cover crop and then drawing the conclusion that this cover crop was of little or much value to the soil or that the use of the special fertilizers was the thing that gave all of the valuable results. The use of barnyard manure, well handled, improves practically every type of exhausted or worn out agricultural land and the mere fact that phosphorus or potash, or nitrogen was used with this material and that good or better crops were received does not prove that the benefits would not have been derived by the use of the decaying vegetation alone.

I am always in favor of advocating the use of commercial fertilizers where they prove profitable, or where every other process possible to be applied has been used without securing all of the crop improvement desired. Our orchard soils are capable of so great improvement through use of cover crops and the application of the farm produced fertilizers that I hesitate always to recommend without caution the use of the commercial materials.

It is especially important that the farmers and fruit growers so organize and

Spreado

MILLER'S PERFECT SPREADER

Ready for use—Simply sift into the spray tank

Oregon Growers Co-operative Association
Affiliated With Oregon Growers Packing Corporation

ROGUE RIVER DISTRICT

Triangle
PEARS



Brand
APPLES

JAS. E. EDMONSTON
Member

Medford, Oregon,
April 22, 1922.

Miller Products Company,
Box 826
Portland, Ore.

Gentlemen:

I want to express to you my entire satisfaction with your caseine spreader sold under the trade name "Spreado". I used this product on two hundred acres of my orchard in 1921 and found that it did everything claimed for it by your company. The use of "Spreado" gave us an especially uniform coloring on our red varieties and I consider it especially valuable for spraying red fruits.

It is reported to me that tests conducted by the Bureau of Chemistry in Washington on samples taken from my orchard showed that all of the fruit carried a greater amount of Arsenate than did a similar number of samples of the most heavily blotched fruit where no Spreado had been used.

We experienced no trouble whatever in getting your product to go into solution and actual tests conducted by me showed that in spraying both apples and pears, a considerable saving is effected in the amount of material required to cover a tree by using "Spreado".

I shall use it in every Arsenate spray in 1922.

Yours very truly,
OREGON GROWERS CO-OPERATIVE ASSOCIATION
Jas. E. Edmiston
Mfr., Rogue River District.

JEE:LV

Use "Spreado" in your calyx spray

Spreado

the original and first commercial spreader, has been tried and proven, and is handled by the largest Associations of the northwest. **INSIST** on "SPREADO."

WHY?

Because "SPREADO" always gives excellent results. Apple Growers' Ass'n, Hood River; Oregon Growers' Co-op. Ass'n., Salem, Oregon, Producers Service Company, Distributors, Yakima Valley, Yakima Fruit Growers' Ass'n, Yakima; Yakima County Horticultural Union, Yakima. Apple Growers' Ass'n., Hood We also sell ultra-fine casein.

Miller Products Company
Portland, Oregon
Manufacturers

GRASSELLI

May is *Arsenate of Lead* month. Get your order in now. (The supply may be limited.)

GRASSELLI
Arsenate of Lead, Calcium Arsenate, Lime Sulphur Solution, Bordeaux Mixture.

GRASSELLI GRIDE Arsenate of Lead means—

1. It is actual GRASSELLI grade—the same famous quality that has made GRASSELLI the foremost name in the chemical world.
2. It has the certified purity, strength and uniformity of all Spray Products bearing the Graskell Label and Guarantee.
3. It is backed by Graskell's 83 years of leadership in the chemical field—our carefully guarded reputation is your protection and warranty.

Ask for GRASSELLI Insecticides and Fungicides and **INSURE RESULTS** in spraying.

Established 1839

THE GRASSELLI CHEMICAL CO., CLEVELAND

develop their farms that the purchase of material necessitating cash outlays will be kept to a minimum, so the cash returns derived from the sale of products can, to the largest extent possible, be considered as labor income. There is no more perfect manufacturing plant than our orchards and farms and if we fail to use them to their

fullest capacity we suffer a waste and this waste is directly charged against the profits possible to be derived from them.

COVER CROPS are used to a large extent in the eastern orchard districts and I think the use of orchard cover crops west of the Cascades has not been developed to

anything like a maximum value. There is great variation in the type of soil. The different kinds of fruit grown of necessity require different systems of soil management. The climate and soil are generally fitted to the production of large quantities of vegetation. If properly farmed the climatic resources are sufficient to maintain a high degree of soil fertility for an indefinite period.

The system of orchard management which will include the planting of cover crops in the later summer or early fall and the turning under of these crops during the spring is a plan capable of being used in practically all western districts of heavy rainfall. If such crops as vetch, wheat, rye, field peas and crimson clover are used, the fertilizing of the soil can be very much improved and, in practically every case, the texture of the soil very greatly improved. In some districts it will be necessary to depend upon the growth made in the fall to develop enough vegetable material to make the cover crop worth while, as late spring growth can not be permitted. Where the rainfall during the spring and early summer is light, the cover crop would soon exhaust the water supply.

Another condition that seems peculiar, yet the local men are convinced of its potency, is that in the prune orchards of Clarke county the orchardists who plow early, more generally escape injury from light spring frosts than the orchardists who plow late. They are convinced of this fact to such an extent that it is recognized as a profitable practice to plow early.

The plowing under of the cover crops in the early spring does not permit of a heavy development of vegetable material, but it has one very great value—that of preventing a complete leaching of the soil during the winter. This, in itself, can do a great deal to maintain the soil fertility.

I do not know to what extent the practice of mulch crops and sod mulch crops could be used in Washington or Oregon. I know that in the eastern part of the United States, with rainfall varying from 35 to 50 inches, many orchardists find it profitable to permit a crop of clover and grasses to occupy the entire land. This material is cut as soon as it reaches the hay stage of development and permitted to fall and lie on the ground during the rest of the season. A large amount of material may grow the second time and must be cut a second time, but all of the material grown on the land is permitted to fall and decay there.

The value of this process increases as the orchard attains age. For the first year or two it may seem that the orchard suffers a bit from want of water, but as the mulch increases in thickness on the soil surface, the water-holding capacity of the soil and mulch is increased and the trees do not suffer from want of water as might have been expected.

Are there CURLED LEAVES on Your Apple Trees



Then get busy. That's a sure sign of Aphis. These little insects are sucking the life out of your trees. Kill them unless you want a small crop of dwarfed, specked fruit. You also run the risk of Aphis killing your trees. Spray at once with

Black Leaf 40

40% Nicotine

Kills Aphis

Recommended by agricultural colleges and experiment stations. Don't make the very common mistake of thinking that Lime-Sulphur, Arsenate of Lead or Bordeaux kills Aphis. They don't, but if you are using those sprays, simply add Black Leaf 40 properly diluted, and make one spraying do double duty. Aphis also attacks Peach, Plum, Cherry as well as many vegetables and plants. Black Leaf 40 is highly concentrated so that only a small amount is required. The cost is small—only a few cents per tree. Free Spray Chart. Your dealer has Black Leaf 40 and one of our free spray charts. If he is out, write us direct.

Tobacco By-Products & Chemical Corporation

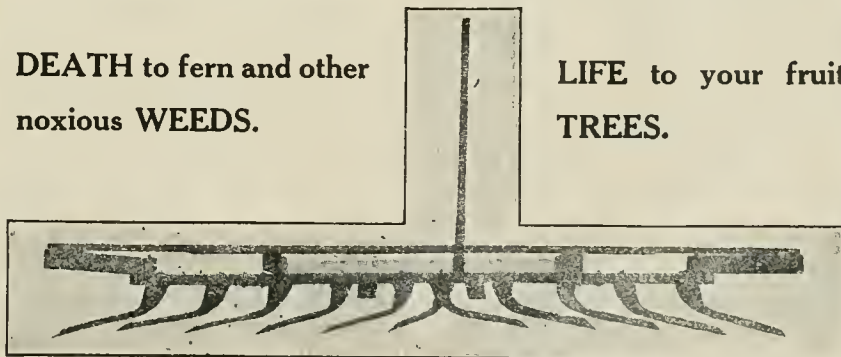
Incorporated

LOUISVILLE, KY.

THE KIMBALL CULTIVATOR

DEATH to fern and other noxious WEEDS.

LIFE to your fruit TREES.



MOISTURE is absolutely necessary to wood growth and fruit production. Without adequate moisture in your soil, fertilizers will not become soluble, hence will not operate when you need them. Too much irrigation is admittedly dangerous.

Your KIMBALL will hold the natural moisture in your soil by forming a perfect mulch, eradicating weeds at the same time. After your spring plowing and discing the KIMBALL is the only tool you need through the balance of the season.

W. A. JOHNSTON, Mfg.

The Dalles

Oregon

Factors Inducing Calyx Spray Injury

(Continued from page 7)

tivation last year. The block immediately adjoining it had had continuous excellent cultivation. Both blocks were sprayed by the same man with the same strength of lime-sulfur. The improperly cared for block suffered from very severe leaf burn and leaf drop, while the other block disclosed not the slightest trace of spray injury.

There are other conditions that contribute to lime-sulfur injury that must be also mentioned because even the poorly cared for orchards escape serious spray burn in many seasons. One of these is the weather. After a period of long continued moist and cloudy weather apple foliage even on trees of good vigor is apt to be unusually sensitive to spray injury. The fact that such conditions prevailed to an unusual extent last spring will account, in part at least, for the very unusual and widespread spray burn met with all over Western Oregon last year. In the average year this danger of ultra-sensitiveness is not to be expected; but when it does exist it is the vigorous and well cultivated trees that suffer the least.

IN SEASONS like that of 1921, the condition known as sulfur-shock is also far more evident than in the normal season. Sulfur-shock is the result of applying lime-sulfur spray on well developed foliage which has not been rendered resistant by earlier application of this material. It is particularly noticeable when the delayed-dormant and pink scab sprays have not been applied and the leaves get their first lime-sulfur spray after the petals have fallen. At times it may be so serious as to cause a large part of the leaves to drop. While marked sulfur-shock may not occur in Oregon in the average season yet it is important that the early spray should be given every year, not only for the resulting scab control, but as something of a protection against sulfur-shock in the later sprays.

Much spray burn occurs in years when weather conditions have been especially favorable for scab development. This burn may not result in any way from the sensitive condition of the tree, but is very often due to unsatisfactory spraying or a neglect of early applications whereby an abundance of scab spots have developed on the leaves. The scab fungus always breaks the leaf skin and wherever lime-sulfur spray touches a scab spot it penetrates into the leaf tissues and kills them, causing brown burned areas to appear. Scab spot burn is naturally to be avoided by putting on a thorough spray program from the very start and thus preventing any extensive development of infections.

Temperature has an important effect on the activity of sulfur sprays. In hot weather, weaker dilutions of lime-sulfur should be used. No accurate experiments

have yet been conducted to determine the exact relations of temperature to sulfur sprays, but the Crop Protection Institute is, I understand, about to undertake such studies during the coming season. These should give us some very valuable information which has long been needed. It is to be hoped that in these investigations efforts will be made to determine how spray injury may be avoided under all circumstances. Meanwhile the grower must follow with care such practices as will keep his trees in the most vigorous condition possible, applying the early protective sprays faithfully and using greater dilutions in hot weather.

Action of Spreaders

SUCCESS of the calyx spray depends largely upon success in getting the spray into the calyx cup, according to an expert who has made a study of the matter. He has a tested theory as to the best means of accomplishing this, which he sets forth as follows:

"To send the lead spray into the calyx cup, real driving power behind the droplets is necessary. Hence we use high power. But the higher the pressure used the finer are the droplets and the resultant mist. Obviously the driving power behind the droplets becomes less as the mist is made finer.

"On the other hand the use of a coarser nozzle and coarser droplets it not so effective because the droplets run off too freely. Here comes in the use of a spray spreader. When a spreader is used in the spray, the drops, even though kept somewhat coarser, spread over the calyx cup when they strike it and carry the lead where it must be if the apples are to be protected against the first brood of codling moths. This property of a spreader gives the added advantage of enabling the sprayer to cover the tops of the trees, where the finer mist cannot be driven."

For the Control of Aphis—

Spray with APHOIL

Which is also an efficient Spreader

Write for information

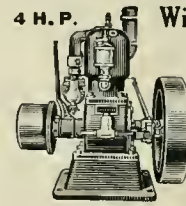
Hood River Spray Co.

HOOD RIVER, OREGON

Manufacturers of DORMOIL

Greater Capacity and Pressure

4 H. P. With a Lighter Engine



Weight, 190 lbs.

That's what the fruit grower needs in spraying to produce the desirable "fog spray." In order to secure greater capacity and pressure, with lighter weight, leading manufacturers of sprayers have now standardized for their power on the high grade

CUSHMAN

The 1½ H. P. Cushman handles the smaller sprayers of 3 to 4½ gallons at 200 to 300 lb. pressure.

The 4 H. P. Cushman (weight 190 lbs.) is the proper size for the larger triplex orchard sprayers with a capacity of 8 to 10 gallons at 250 to 300 lb. pressure or more.

The 8 H. P. Double Cylinder Cushman, weighing only 320 lbs., is the ideal engine for the largest orchard and standard shade tree sprayers.

Rebuild Your Sprayer
with the famous Cushman Engine and get more power and pressure with less weight.

Write for free Catalog, mentioning the sprayer you have or expect to buy. (13)

CUSHMAN MOTOR WORKS

978 N. 21st Street

419 East Ash St.,

Lincoln, Nebr.

Portland, Ore.



FREE CATALOG

Sash, Doors
Millwork

Hundreds of beautiful designs direct from the manufacturer at money-saving prices. Send for your copy today.

ROVIG
LUMBER
CO.

2205 First Avenue So., Seattle.

The Clarke County district in Washington is said to be capable of producing 10,000,000 pounds of prunes under normal conditions.

Michael H. Walsh, horticulturist internationally known as the originator of the Rambler rose, died April 10, at his home in Massachusetts at the age of 74.

Advertising Plans

From nearly every section of the Pacific Northwest comes word that the growers are this spring raising special funds to be expended in the advertising of the Northwest's boxed apples. Wenatchee growers propose a fund of \$250,000. Hood River and Yakima districts and the Idaho State Horticultural Association all have under consideration plans for such a fund, or have actually arranged to collect one. The need and value of such concerted advertising has been made apparent. Far-reaching benefits are sure to result if the growers do not lag in this good work.

WASHINGTON

REPORTS from Wenatchee are to the effect that several hundred acres of new orchards and berry fields will be set out in that district this season. On lands just brought under irrigation in Grant County there will be heavy plantings of peaches and apricots, with strawberries, loganberries and blackcaps as fillers. In the Tonasket-Oroville section many apple trees are to be planted, with apricots and smaller fruits as fillers.

▲ ▲ ▲

ACCORDING to report of Henry Huff, district horticultural inspector stationed at Puyallup, the total value of fruit and vegetable crops in the district in 1921 was \$2,161,849. Local canneries and plants used 7,701 tons of fruits and 780 tons of vegetables. Fruit shipments totaled 4,853 tons and vegetable shipments 3,996 tons. New acreages this spring are to aggregate 600 acres of raspberries, 185 acres of evergreen blackberries and 150 acres of loganberries.

▲ ▲ ▲

WENATCHEE'S special committee on apple advertising will recommend that a fund of at least \$250,000 to be obtained through an assessment of 2 cents a box and subscriptions of shippers and business men, be raised this season to be spent through a capable advertising agency. After details of the proposal have been announced a referendum will be taken among the growers to make sure they approve so large an expenditure. The committee which framed the plan is composed of John R. Peters, O. B. Shay, John R. Everett, J. M. Wade and Edwin Smith.

▲ ▲ ▲

ANNOUNCEMENT is made that M. L. Dean has resigned his position as head of production and inspection department of the Wenatchee District Co-Operative Association. Dean, who is secretary of the Washington State Horticultural Association, held his position with the co-operative association a little more than a year. He was formerly with the State Department of Agriculture.

▲ ▲ ▲

C. A. HUNTLEY of Yakima has been made horticultural inspector in Pacific county, where he will particularly look after cranberry problems and production in the bogs of the county. For some time he has been doing work for the state department of agriculture in Thurston county.

▲ ▲ ▲

FOR THE FIRST time in two years the Vancouver Prunarians will stage a prune harvest festival this year, according to unanimous vote at a recent meeting. Business conditions have so improved it is felt that the affair can again be made a big success.

▲ ▲ ▲

PRUNE, POTATO and strawberry growers of Clarke county, affiliated in the Washington Growers' Packing Corporation, have been so well pleased with last season's results that new members are daily being signed up, according to Man-

**LABLES
CARTONS**
LITHOGRAPHED
DISPLAYS
F.C. Stettler Mfg. Co.
Portland, Oregon

ager E. J. Newhouse. Eighty per cent of the prune growers are members, and 90 per cent of the county's strawberry crop is handled by the association.

▲ ▲ ▲

IT HAS BEEN announced at Montesano that an active pear planting campaign will be waged this summer and fall by the Montesano Packing company. W. C. Mumaw, the manager, is also urging the planting of more Montmorency cherries.

▲ ▲ ▲

ABOUT THE middle of April the green aphid pest showed rapid spread around Chehalis, according to Deputy Horticulturist Albert. He predicted that this season will be one of the worst yet experienced with this pest and began a campaign of spraying to eradicate it.

▲ ▲ ▲

UNUSUAL AMOUNTS of spray materials and fertilizer have been purchased by growers of Clake county this spring. Coupled with the fact that special attention has been given to pruning this must be taken to indicate that orchardists and farmers are taking better care of their trees.

▲ ▲ ▲

J. W. EGAN is having 14 acres of loganberries planted on a tract of 15 acres near Walla Walla, it is reported. He will interplant potatoes in the tract this year.

▲ ▲ ▲

THE LARGEST strawberry planting reported from the upper valley at Yakima for this season has been made by William Lee, who has put out five acres berries of the Nick Ohmer variety. Mr. Lee's ranch is at Naches.

▲ ▲ ▲

D. A. McDONALD is said to be setting out ten acres of pears at Donald. He is planting the Bartlett and Winter Nelis varieties.

OREGON

HIGHLY important experiments in cherry pollination are being conducted in Wasco county this season by Professor C. E. Schuster of Oregon Agricultural College. He will have a corps of assistants and will be aided by County Agent Jackman and Horticultural Bureau Chief Nelson. The experiments are expected to produce data on the problem of cherry pollination that will be of far-reaching benefit to growers and experts of the nation.

▲ ▲ ▲

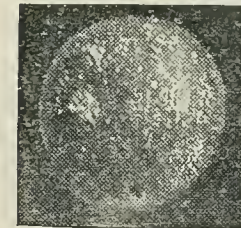
A. L. PAGE has sold his east-side orchard at Hood River to R. Starkell, former Walla

ALBATROSS BRANDS

Prevent

the "blotch" or "burn" of the
spray on fruit

Observe this study in contrasts. The apple at the left was sprayed with Arsenate of Lead—a wonderfully good spray. But the user neglected to mix "Spray Spread" with it. Below is a similar apple—sprayed with the same kind of spray—but Albatross Spray Spread was mixed with the spray. Note the difference—the "lead" dried on the FIRST apple in



Note the "blotch" or "burn" of the lead on this apple

spots or blotches. The second apple received an equal amount of protective spray—but it spread over the apple in a thin film. Appearance and marketing appeal of the apple thus retained. The pictures tell why Government experts are so enthused over "Spray Spread"—why experienced horticulturists say it has NO equal for spreading an "arsenate of lead" spray.

ALBATROSS "SPRAY SPREAD"

(Calcium Caseinate Compound)
The Original and Genuine Spray Spreader

- Quality Features:
1. Very finely ground—always uniform.
 2. Quickly Soluble.
 3. No lost time.
 4. Protects fruit with uniform coating.
 5. Does not injure foliage.
 6. Recommended by experts.
 7. Guaranteed by manufacturers.



Directions sent with each order

Note the uniform, adhering film on this apple

PACKAGES
Write for Prices
200 lb. Bbl. Boxes 1 lb. Pkgs.
Freight prepaid to Northwest points.

NOTE: If you use Casein, specify ALBATROSS Supreme. Also call for Albatross Dry Bordeaux.

General Basic Products Co., Sole Manufacturers, 4796 E. Marginal Way, Seattle, U. S. A. Dealers: Address us for attractive sales proposition.

TREES AND SHRUBS

Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Strawberry, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.
Toppenish, Washington.
Salesmen everywhere. More wanted.

Walla fruit man. The price for the 10-acre tract is given as \$9,500. Mr. Page immediately purchased from Russell A. McCullay a neighboring ten acres of bearing orchard for \$10,500. F. H. Kingdon has bought the 10-acre tract of A. E. Dugman, on Neal Creek and Albert and Herbert Krussow have acquired an adjoining ten acres from W. F. Laraway.

▲ ▲ ▲

ACCORDING to decision of the state supreme court the grower members of the Salem Fruit

Union who contracted in 1917 to deliver their loganberries to the Phez Company must comply with terms of that contract. Numerous growers broke the five-year contract when more attractive prices than those stipulated were offered by other buyers.

ON APRIL 14 the berry growers of the Gresham district held their second series of field meetings, visiting the yards of numerous growers for a study of production methods and practices.

MORE THAN 4,000,000 pounds of fruit was handled by the Producers' Canning and Packing Company at Salem, during 1921, it was shown by the annual report recently submitted to stockholders. A substantial profit was passed into the building and improvement fund. G. W. Needham was elected a director to succeed K. D. Kugel.

J. W. HICKS, former Oak Grove orchardist and for a number of years on the inspection force of the Apple Growers' Association, has been appointed temporary deputy fruit inspector in Hood River county. He now has charge of nursery stock inspection and will officiate during the strawberry season in case a county inspector is not named by that time.

I. R. ACHESON, who has been serving as director of sales of the Hood River Canning Company, particularly in the East and abroad, returned recently from a tour of the United Kingdom. He spent a month in England and Scotland and found business conditions fast improving there, he reported.

ACCORDING to Dr. C. A. Macrum of the Mosier Fruit Growers' Association, there will be extensive plantings of Blenheim and Clinton apricots at Mosier this season. Oother plantings will include a considerable acreage of plums, cherries and pears.

AT PINE GROVE, in the Hood River district, J. C. Porter, ex-director of the Apple Growers' Association, has sold 27 acres of orchard to George T. Gallagan and L. E. Ireland has sold 27.7 acres to F. M. Peugh. The purchasers already owned orchards in the same section.

THE APPLE Growers' Association at Hood River has re-elected all its old officers, as follows: E. W. Birge, president; R. J. McIsaac, vice-president; C. King Benton, secretary.

CALIFORNIA

CONDITIONS in El Dorado county have proven highly favorable for cherry growing and acreages there are rapidly expanding. Heavy plantings of trees have been made in Pilot Hill and Cool districts, most of them above the irrigation ditches. The growers plow the land twice each spring to provide a soil mulch.

THE MINIMUM wage for women in the fruit canning and packing industries of the state was recently fixed at \$15 a week. This is a reduction of \$1 a week under the minimum scale that prevailed last season.

UNDER PROVISIONS of the new laws on fruit and vegetable standardization strawberries may be sold in California only in standard baskets containing a dry pint. Under no circumstances may the old half-pint basket be used.

IN NUMBER of nurseries California leads the country, with 540. New York, ranking next, has 359. New York has 5288 acres devoted to nurseries, containing stock valued at \$2,310,253. California has 4080 acres on which the stock is worth \$2,920,458.

CONSTRUCTION of a new temporary Department of Agriculture building in Sacramento at Tenth and L streets, is being rushed and it is said there will be great advantage in having all units house together in the new quarters.

UNDER THE urging of Theodore D. Urbahns of the bureau of pest control unusually careful spraying against the peach moth and peach leaf curl is said to have been done this spring in most peach sections of the state.

BY WAY of guarding the chestnut industry which has had a favorable start in the state, the state quarantine guardian is attempting to keep out all shipments of trees coming from eastern states where chestnut bark disease is prevalent. The disease is said to have wiped out the industry in many eastern sections.

TOTAL SHIPMENTS of cherries and peaches from California to the east in 1921 were slightly greater than in 1920. Cherry shipments showed the greatest increase there having been 665 carloads as compared with 494 carloads in 1920. Peach shipments increased from 3,107 carloads to 3,333 carloads, while apricots decreased from 312 to 284 carloads.

FIFTY ACRES of Bartlett pears are being planted in the Upper Sutter Basin district by Perry Hiatt, together with ten acres of cherries.

THE TERRA BELLA peach growers have completed arrangements for marketing this season's crop through the California Canning Peach Growers' Association, organized recently.

IN NAPA county an observation experiment in which 28 varieties of prunes are to be produced on one orchard, has been arranged. The object of course is to learn which varieties do the best.

IDAHO

LETTUCE growers of Idaho have organized and have adopted standard grades for their product. Except for slight changes the grades correspond to those of California. W. S. McBirney was elected president of the growers' body and A. C. Saxton was named secretary.

PRUNE growers of the Boise valley district have formed a corporation to take care of the marketing of their crop. Last season the valley shipped about 100 cars of green prunes, of which more than 50 cars were handled by the growers' association.

AT A RECENT stockholders' meeting of the Boise Valley Growers Inc., composed of prune growers, it was voted to change the name of the association to the Boise Valley Prune Growers, Inc. These were the officers elected: Fremont Wood, president; F. H. Chamberlain, vice-president; P. P. Garvin, secretary-treasurer.

A SPECIAL committee to develop plans for advertising northwestern boxed apples was appointed recently by the State Horticultural Association. The report of the committee will soon be ready for consideration. Fruit men on the committee are: T. O. Hyslop, Twin Falls; J. J. Steel, Parma; A. E. Gipson and J. J. Allison, Caldwell; Dr. E. F. Coleman, Kuna; John Moulton, Weiser; Harry Yost, Meridian; Lee Truax, Boise; D. VanHoesen, Council; L. S. Yoder and Harry Richards, Nampa; Guy Dalton, Emmet.

AT BONNER'S FERRY the Boundary county Potato Growers' Association has been organized and a large number of growers have signed up a three-year agreement with the association. The directors are: George Kindschuh, Emil Frank, J. M. Billings and O. H. Campbell, of Bonner's Ferry and J. A. Morice of Naples.

Dusting of Trees, Vines, Etc. Bleaching, Etc.



ANCHOR BRAND SUBLIMED VELVET FLOWERS OF SULPHUR, also EAGLE BRAND and FLEUR DE SOUFRE, packed in double sacks, are the FLUFFIEST and PUREST sulphurs that money can buy.

The fine, light, SNOWFLAKE-LIKE particles float to every surface and crevice of the plant.

Do not adulterate these sulphurs with any inert material such as lime or Kaolin, etc. Coating the sulphur particles with an inert material PREVENTS the FUMING ACTION caused by the sun's rays.

Send for Circulars 6, 8 and 10 about our "Toro" Brand Agricultural Compound and booklet "The Truth About Sublimed Sulphur," also price list.

San Francisco Sulphur Co.

624 California St.

San Francisco, Cal.

BEE SUPPLIES ready for immediate shipment Quality Goods at Reduced Prices

Write us Superior Honey Company

OGDEN, UTAH

"Everything in Bee Supplies"

B E E S

The Diamond Match Company

APIARY DEPARTMENT Manufacturers of Bee Keepers' Supplies

Chico, California, U. S. A.

(The largest bee hive factory in the world)

Write for catalog and discount sheet; and, if a beginner, for Cottage Bee-Keeping, also for particulars of the MacDonald Aluminum Combs.

Why Not Order Now?

TREES

For Resetting or New Orchards

Our supply will take care of your needs and you will receive stock which is well grown and reliable.

Capital City Nursery Company

426 Oregon Building Salem, Oregon

WE NEED SALESMEN

With the Poultry

FEEDING OF CHICKS

THE newly-hatched chick should not be given food until it is at least 48 to 72 hours old. This is important. The yolk which is only partly used as food during the incubation period, is drawn into the abdomen just before the chick emerges from the shell. The yolk furnishes sufficient nourishment to keep the chick alive for a number of days. This factor is what makes it possible to ship chicks long distances.

Feeding the chick too soon after hatching results in disarrangement of the digestive tract and retards the normal absorption of the yolk. It thus remains unabsorbed in the body of the chick and finally causes its death.

The first food the chick should receive after being removed from the nest or incubator, says an instructor in poultry raising, is clean, fresh water with the chill removed. The young chick drinks a great deal of water and plenty of it is necessary for its health and development. Also provide grit (sand), and charcoal, (chick size), for it to pick at. These ingredients start the digestive tract and digestive juices to functioning so that they will be in better condition to digest the first food eaten. Lusty chirping indicates that it is time for the first feeding. The first food should be of an easily digested nature. Oatmeal, dry bread crumbs, or a mash mixture of ground feeds, make very good starting foods.

▲ ▲ ▲

TEN IMPORTANT RULES

ONE OF the poultrymen at the University of Wisconsin has ten rules for rearing chicks which he religiously follows. Here they are:

Use healthy, active and if possible free range breeding stock.

Have hover warm enough, so chicks will not crowd underneath. A cold hover is dangerous.

Give milk or buttermilk to drink from start and for the first ten days feed at least five times a day but very little at a time.

Very important—keep the chicks busy and do not feed enough scratch feed to fill their crops more than one-third full except the last feeding at night.

Do not have any draft where chicks sleep.

Watch chicks closely at bed time, so that they do not crowd or get into corners.

No matter how cold, get chicks out of doors as soon as possible, but so they can run to hover whenever they wish.

Commence feeding green feed when about a week old, preferably having chicks run on green clover.

Give plenty of room and air as chicks grow.

Keep close watch for mites; for if they are not controlled, no chicks can be raised.

▲ ▲ ▲

FOWLS OF FINE FEATHERS

THE ornamental breeds and varieties of chickens often have an unusual appeal. A breeder who may be first attracted to such fowls by their unusual plumage may develop a flock later which has decided utility value, an activity which thus responds to the desire for something exceptional, and at the same time profitable. Farmers' Bulletin 1221, issued recently by the United States Department of Agriculture, on "Standard Varieties of Chickens," is the fourth in a series from the Bureau of Animal Industry.

The present bulletin treats of the principal reasons for keeping chickens, and goes into particular detail regarding the fowls in these classes: Polish, Hamburg, Game, Oriental (in which are the Sumatra and Malay,) and two miscellaneous breeds, the Sultan and the Frizzles.

The poultry industry of the United States is concerned mainly with the production of food, but in addition to this there are fowls of such

beauty of plumage or form kept merely for pleasure, because of their rarity or unusual appearance. It is this latter interest which accounts for a large number of the breeds and varieties and for the variation in type, color, and color patterns.

▲ ▲ ▲

FIGHTING THE MITES

ETERNAL vigilance is the price of keeping houses and coops free from mites. A mite is very small and difficult to see unless special search is made. They are usually found in cracks near the roosts. They appear as minute gray or reddish specks. When present in large numbers they often have the appearance of dust. Mites reproduce very rapidly and are a great source of annoyance to the hens when present in large numbers. The mites live by sucking the blood from the hens. A severe attack of mites will cause the hens to lose flesh and stop laying, and will oftentimes produce death.

To get rid of mites the houses must be carefully cleaned and then painted or sprayed with repellent material. A heavy spraying of coal oil followed in two or three days by giving the roosts and surrounding boards a thorough painting with crude oil will clean up the mites and keep the houses free for several months. This treatment should be applied twice yearly to all poultry houses as a precautionary measure against mites.

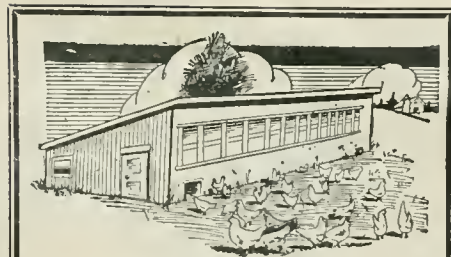
Effects of Miscible Oil Spray

(Continued from page 9)

Most manufacturers of miscible oil sprays caution the use of these preparations during cold weather. They give no reasons, as far as I have been able to ascertain as to the probable cause of injury if unfavorable conditions are encountered. If the use of oil sprays on tree growth is sometimes attended with a certain amount of danger when applied under certain conditions this fact should be plainly stated on the receptacles containing the materials.

EFFECT ON THE TREES—Owing to the extreme cold weather which followed the spraying, the trees were watched very closely. According to some manufacturers trees sprayed with an oil spray go into the winter free from the injurious effects of insect pests. Furthermore, the soluble oils are supposed to have a cleansing and stimulating effect greater than lime-sulfur or any other spray. Apparently this appeared to be true with the trees under consideration for they came through the winter without visible injury. The trees leaved out and blossomed, but upon close examination, the leaves and blossoms were much smaller than those not sprayed. A few days later the owner again examined the trees and found many of them dead or in a dying condition. (See illustration).

This matter was immediately called to my attention and on making a personal examination of the trees I found the conditions as here noted. A detailed study of the trees showed a dark brown discoloration of the inner bark and a sour condition of the sap. This was particularly true when the trunk and larger limbs were examined. Brown streaks also extended some distance into the sap wood. The smaller branches showed small areas injured. Later



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c

A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00

This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Arrow Carbolineum

(Formerly Avenarius Carbolineum)

Protects poultry against vermin—Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING COMPANY

222 E. Water St. Portland, Oregon

BOXES

GROWERS—CANNERS

Let Us Figure With You on Your Needs

American Box & Crate Mfg. Co.

PORTLAND, OREGON

examinations during the summer showed a very pronounced enlarging of the lenticles in the bark. That this condition was not caused by root trouble was evidenced by the rank sucker growth which came up from the roots.

This doubtless was purely a case of spray injury for the trees of the same variety in the same general region and growing under practically the same conditions that had not been sprayed were in a healthy vigorous condition.

Under some conditions miscible oil sprays may also cause more or less injury when applied in the spring. In the Clearwater orchard some Spitzenberg trees sprayed in the spring with the same material caused a very marked retardation of the buds from which they never fully recovered. These trees, however, no doubt

went into the winter in a very weakened condition due to the prevalence of blight.

Observations made last spring in the Payette Valley by Professor L. E. Longley also seem to substantiate the above statement.

Professor M. B. Waite, pathologist U. S. Department of Agriculture, states that "miscible oils are very often injurious to the peach, whether sprayed in the fall, winter or spring. Miscible oils are much more dangerous on the apple and doubtless on other fruits where applied in the fall or winter than when applied in the spring. We have had several rather striking cases of this, where miscible oils supplied by the same dealer were sprayed at different times. One very serious case of this sort occurred in a moderately young apple orchard at Winchester, Virginia, from December spraying. March spraying with the same material in several other orchards was not injurious."

THEORY OF OIL'S ACTION—While the exact physiological action of miscible oils on fruit trees is not generally understood a number of authorities have ventured an opinion. Dr. Felt, entomologist of the New York State Museum, is under the impression that oils penetrate the inner and outer sap wood destroying the living cells and preventing the normal circulation. This, if sufficiently general, may result in death of the tree.

Professor O. M. Morris, horticulturist of Washington State College, reports that "the oil sprays are very effective in slowing down the vital processes going on in the tree tops and if the material is applied while the trees are in their dormant state, the vital processes are slowed down to what would seem to be almost a standstill. In this condition they are able to resist and pass unnoticed any normally unfavorable condition of weather or disturbance of soil, such as transplanting, but are not able to endure the maximum unfavorable weather if prolonged. With a normal atmosphere and a coating of oil spray, the trees experienced what would be practically equal to a temperature of about 40 to 42 degrees below zero. This they could not endure if continued."

In addition to the above there are no doubt several contributing causes favoring penetration by oils, thus increasing the injury. Low winter temperatures causing vital activities in the trees to be at a minimum will no doubt drive the oil into the bark. Spraying just before or during a wet, sticky snow storm or during foggy weather will prevent the oil from drying, thus causing penetration.

ONE poultryman makes it a regular practice to plant a few artichokes in the poultry yards each year. The chickens do not eat the tops but enjoy them as shade during the hot days, he says.

RYE HAS plenty of feeding qualities, but chickens will seldom eat it.

**WRITE
RIGHT
NOW!**

For our Book "DEHYDRATION OF FOOD PRODUCTS"
—It's Free. There is a best way to dry APPLES, PRUNES, etc.

Stephenson-Schaller Co.
ENGINEERS-MANUFACTURERS
SAN FRANCISCO

We Build Best
Plants for
Dehydration of
Fruits and
Vegetables at
Low Cost

Address 312 Liberty Bank Building, San Francisco

Marketing News of Interest

THOUGH there has been a slight weakness in apple markets during recent weeks it has not been sufficiently marked to cause any concern over the manner in which the crop will clean up. The latest report from the east is here summarized:

The tone of the eastern apple market in general was slightly weaker, although prices of barreled stock showed little change at a general range of \$7.50@8.50 for best grades of Baldwins. A few markets made slight price concessions. Northwestern extra fancy Winesaps showed a few declines of 25c, but the general range held mostly \$3@4, with a slight weakness in several markets, but steady in New York and Kansas City.

Shipments, mostly from Washington and New York states, are steadily decreasing.

Storage stocks April 1 included 576,940 barrels compared with 996,004 March 1; also 4,062,913 boxes April 1, compared with 6,282,043 March 1.

▲▲▲

A TOTAL of 43,521 cars of apples were shipped from the four Pacific northwestern states during the period from July 1, 1921, to March 1, 1922, according to figures compiled at the office of the bureau of markets in the Spokane Federal building. These figures show an increase of 18,246 cars over the previous year, when 25,275 cars were shipped.

The Wenatchee valley shows the largest shipment with a total of 13,988 cars, an increase of more than 5,000 cars over the previous year. The Yakima valley is second with a total of 11,862, an increase of more than 4,000 cars over the year previous.

The Hood River-White Salmon district is next with a total of 4046, a gain of nearly 2,000 cars over the year previous.

The Idaho district shipped a total of 5830 cars, a gain of 3,000 over last year.

The Spokane district, which includes territory as far west as the Big Bend, north to the Canadian boundary, east to the Idaho line, shipped 2887 cars, an increase of 659 over last year's crop.

The district of eastern Oregon shipped 1563 cars, an increase of more than 1100. Walla Walla district shipped 1443 cars, as against 318 the year previous.

The Rogue River district of Oregon shipped 985 cars, as compared with 368 last year. Montana district shipped 672, as against 437, and the district of western Oregon shipped 524 cars, as compared to 322 in the previous year.

▲▲▲

IT WAS reported from Yakima, Wash., that for the week ending April 7 apple shipments from the Yakima valley aggregated 129 carloads. Latest estimates place the number of cars remaining on hand at 400, but it was said these would nearly all go forward before May 1.

On April 15 it was reported from Grandview, Wash., that there remained only 50 cars of apples in cold storage there.

▲▲▲

A RECORD price for the sale of Stevens county Nettle Gem seed potatoes has been announced by F. A. Savage, manager of the Stevens county

Washington Growers Packing Corporation

Vancouver, Washington

AN organization of growers that co-operatively receives, grades, packs and sells the leading farm products for its members in Clarke and Skamania counties.

PRUNES

WELL over one hundred and twenty-five cars of dried prunes are shipped out every year by us to all parts of the world. Great care is taken in improving the quality of this greatest of dried fruits. A special dryer inspection, never done before, will further guarantee the highest quality. We ship under both Mistland and Bestwest brands. Our eight-pound gift boxes a specialty.

POTATOES

CLARKE county certified seed potatoes are rapidly becoming known throughout the Northwest. Carloads of this valuable seed are being shipped out by this association to various parts of Oregon and Washington. We have been totally unable to fill the orders. These potatoes are grown in the same district that produced the winning potatoes in a recent contest at the Experiment Station at Pullman. Our potato manager, Mr. J. E. Larson, is nationally known as a potato expert. We specialize in Burbank and Nettle Gem seed potatoes not certified.

STRAWBERRIES

WE WILL soon be shipping strawberries. A postal card stating your requirements will receive prompt and courteous consideration.

Rubber Stamps for Fruit Boxes

Write for Sample and Prices to

ROGERS COMPANY

Gerlinger Bldg., PORTLAND, ORE.

farm bureau. The returns on one car of pooled potatoes that the bureau shipped for its members averaged over \$60 a ton.

Swarming of Bees

WHEN the field bees are confined to their hives by several days of rain just previous to or during the swarming season, the result may be a greatly increased tendency to swarm. Sometimes two weeks of rain at about the time of normal swarming season is followed by intense swarming. When the field bees remain in their hives a part of the time during the honey-flow because the flowers yield nectar erratically the tendency to swarm may be greatly increased. The presence of the great mass of field bees within the hive during the heat of the day from any of these causes must add greatly to the tendency to swarm, especially when the bees crowd in great masses in the space below the frames and in the lower portion of the brood-chamber, as they usually do when they are in their hives temporarily during the honey-flow.

There is, of course, no way by which the field bees can be prevented from staying in their hives, even if it were desirable to do so, but by providing a deep space below the frames and an abundance of ventilation, together with adequate protection from the direct rays of the sun, the discomfort of the colony brought about by the field bees within the hive during the day may be considerably relieved.

To prevent swarming to the greatest extent, says a late government bulletin, it is necessary to induce most of the hive workers to leave the brood nest early in their lives to take up work in the supers, so that the bees of the hive are distributed over a large comb surface which, in turn, should stimulate the field bees to go to the field in greater numbers. During the heat of the day no more bees should remain within the brood-chamber than are needed for the work to be done there. Such a distribution and employment of the hive workers usually induces the field workers to put forth the greatest energy in gathering nectar.

After having used all the known preventative measures, there will still be some colonies that attempt to swarm in certain locations during some seasons even in extracted-honey production, and in comb-honey production a large percentage of colonies may attempt to swarm. In either case, but especially in extracted-honey production, some of these swarms are probably a result of the imperfect application of preventative measures in time to prevent the beginning of the series of events which lead up to the actual issuing of the swarm.

The conditions within the brood-chamber are changed greatly by swarming, both in the swarm and in the parent colony. In the swarm there are no very young bees and, of course, no emerging bees during the first three weeks. The workers of the swarm that are not needed for the work inside the new hive are old enough for work in the fields, and when most of the bees of a colony can go to the fields for nectar during the heat of the day a surprisingly large number may be massed together in one hive without causing a stagnation of their activities. When the first young bees begin to emerge three weeks later the daily emergence of young is small in comparison with that of a colony during the spring brood-rearing period; therefore the swarms usually do not become greatly congested with young bees again during the same season.

Swarms that are hived in an empty hive on a new location seldom swarm again in the same season, especially where the season is short, but if they are hived on empty combs or combs containing honey or a little emerging brood they may do so. Even when most of the workers of both the parent colony and the swarm are reunited, or when two or more swarms are hived together in one hive, the bees are usually satisfied without further swarming if plenty of room is given in the supers.

The parent colony loses most of its field workers and the queen when a swarm issues, but it has a large amount of brood and several queen cells usually sealed or nearly ready to be sealed at the time of the issuing of the swarm. When the young queens begin to emerge about a week later

if the beekeeper does not interfere, the colony may cast one or more afterswarms, each accompanied by one or more of the recently emerged virgin queens. When there are no longer sufficient bees left to divide up among the emerging queens, all but one of the young queens are killed, this surviving one in the normal course of events later becoming established as the new mother of the parent colony.

The rapid emergence of young bees soon restores the parent colony to good strength, but when swarming takes place during the honey-flow the parent colony may not recover sufficient strength in field workers to take an important part in gathering the season's crop of honey. After the young queen becomes established a parent colony seldom swarms again in the same season, even though it may become quite populous and the season may be prosperous.

Thus neither the swarm having the old queen and the older bees in establishing itself in a new home, nor the parent colony having the young queen in reestablishing itself in the old home, is inclined to swarm again in the same season. In each case there is an interruption in the emergence of young bees. These are important facts in the control of swarming.

Flavor

Flavor is *everything* in chocolate. Yet flavor is a spirited, "runaway" thing. Constant "watch" must be held over it. So much do we think of the flavor of Ghirardelli's Ground Chocolate that not only do we watch it carefully in the blending—but we pack it only in cans to safeguard it every step of the way. That's why Ghirardelli's protects and preserves its flavor until the last spoonful is used.

Since 1852 D. GHIRARDELLI CO. San Francisco

Say
"Gear-ar-delly"
and send for
recipe booklet



GHIRARDELLI'S Ground CHOCOLATE



FOR FARMERS WHO GROW FRUIT

Every farmer with an apple or peach orchard will find much of interest in each issue of this live monthly bulletin. Published to promote better practice in handling fruit crops. Subscription price one dollar a year. Mailed FREE to any large fruit packer or grower.

Skinner Packing House News

Dunedin

Third St.

Florida

**Classified
Advertisements**

RATES, 4 CENTS PER WORD

NURSERY STOCK

BLACKBERRY PLANTS—Cory's Thornless. Requires less sugar in cooking than any other. Macatawa—Raspberries. Alton Improved—Ranere—Blackcaps—Loganberry—Rhubarb roots. Jno. Lammiman, Rt. 1, Palo Alto.

CORY'S THORNLESS BLACKBERRY—Large and early. A sure winner; you get well-rooted plants true to name; 10, \$1.60, postpaid. Write for quantity prices. Wm. Mortenson, Route 1, Lodi, California.

CORY THORNLESS BLACKBERRY—Extra large, vigorous plants from experienced growers and shippers; 12, \$1.75; 25, \$3.25; 50, \$6.00; postpaid; satisfaction guaranteed; illustrated folder. Write Chas. E. Mortenson, Lodi, Calif.

BEEES

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. "Everything in Bee Supplies." Superior Honey Co., Ogden, Utah.

JOHNSON'S PACKAGE BEES and vigorous Italian queens. Safe arrival and satisfaction guaranteed. Write for reduced prices. George T. Johnson, 165 Raymond Avenue, San Jose, California.

POULTRY

S. C. BUFF LEGHORNS—Just won fifth cockerel, Chicago Coliseum. Cockerels and eggs. M. H. Mann, Wood Cross, Utah.

500,000 WHITE LEGHORN Baby Chicks—Bred for eggs, vigor, size. Safe arrival in good condition guaranteed. Free catalog and book on "Raising the Chicks." Oak Heights Poultry Farm, Route 3, Box 67B, Tacoma, Wash.

NINE HUNDRED BRONZE TURKEY eggs promised by May, then more orders wanted. Eggs from Pearl Guineas just arrived from Illinois. Eggs from Hoganized Buff Orpingtons. Mrs. J. Wellborn, Warren, Oregon.

HEAVY LAYING STRAIN—S. C. Brown, S. C. White Leghorn hatching eggs, at fair prices. Deer Creek Stock Farm; Kerr Bros. Props., Sheridan, Oregon.

REAL ESTATE

FOR SALE—Fine income orchard and alfalfa, near Lyle, Washington. Last crop sales about \$2300. Price \$5500, plus any expense paid against this year's crop, \$3000 cash. This is good and a splendid bargain. Get details. D. C. Roseboro, 368-12th Street, Oakland, California.

THE A. L. JOHNSON CO., of Turlock, California, are prepared to offer many fine locations of California ranch and residence properties to interested parties at reasonable prices. For information write box 363, Turlock, California.

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables, hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Wash.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

WANT TO HEAR from owner having farm for sale; give particulars and lowest price. John T. Black, 197th Street, Chippewa Falls, Wisconsin.

FORTY-THREE ACRES—Upper Hood River Valley, on new Loop Road around Mt. Hood; 15 acres commercial orchard, 10 years old, just coming into full bearing; 2 acres strawberries; 3 acres alfalfa; 4 acres under plow; fine potato land. Two good houses; two barns, one used for packing house; good stream, some free water; every acre under irrigation ditch; two miles from town; depot, stores, grade and high schools, church and library. One of choicest locations in upper valley. Fine view of Mt. Hood and Mt. Adams. Price \$15,000, \$6,000 cash. M. I. C., care Better Fruit.

MISCELLANEOUS

PEDIGREED White Scotch Collie Pups. Write for descriptive price list. Mrs. E. A. Bennet, Salem, Oregon.

OLD FASHIONED TENNESSEE RED LEAF tobacco, 10 lbs., No. 1, \$3.50; 10 lbs., No. 2, \$3; 10 lbs., Old Kentucky Burley, \$5. All prepaid; satisfaction or money back. Jim Foy, Dukedom, Tennessee. Reference, Dukedom bank.

TRY OUR EARLIEST OF ALL, or Six Weeks potatoes. Also our Wonderful Hardy Hybrid Alfalfa. J. L. Lawson,—Reliable Seed and Nurseryman, San Jose, California.

TRACTOR BARGAINS—Cletrac "W," only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Badley, 425 E. Morrison, St., Portland, Oregon.

BEFORE BUYING—Have an experienced horticulturist examine your orchard for you. I saved one man \$5,000 on a \$14,000 deal. Special attention given to orchards of non-resident owners. Private demonstrations and consultations given. Luke Powell, Yakima, Wash., consulting horticulturist. (I do not sell real estate.)

HOMESPUN CHEWING OR SMOKING TOBACCO—5 lbs., \$1.25; 10 lbs., \$2.50; 20 lbs., \$4.50. Farmers Union, Mayfield, Ky.

TILICUM—A fluid grafting and covering wax; no heating required, \$1.25 a quart prepaid, Paul Kruger, Watsonville, California.

FUR BEARING ANIMALS

SILVER AND CROSS FOXES FOR SALE. William Rambo, 407 Sprague, Spokane.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO. 427 Oregon Building Salem, Oregon

POSITIONS

WORK FOR YOUR government. Men—women over 17. Steady, permanent, pleasant work. \$92 to \$192 month. Common education sufficient. List positions free. Write today—sure. Franklin Institute, Dept. D105, Rochester, N. Y.

Our Inquiry Department

I WOULD like very much the particulars and history of the various stages and organizations that the California co-operative fruit growers' went through prior to the time the present organization of the California citrus growers' was reached. If you have not the information, I would like the address of the secretary or manager of the above organization. I wish data to present to independent shippers in Okanogan.

W. A. B., B. C.

You can doubtless best obtain the information you seek by writing to the California Fruit Growers' Exchange, Los Angeles, Cal. The general manager or secretary will answer. If for any reason he does not give the needed information or cite you to it you might write the State Department of Agriculture, Sacramento, Cal.

WILL YOU kindly give me the address of the secretary of the Idaho State Horticultural Society.

R. H., Wash.

I. Lee Truax, Boise, Idaho, is secretary of the Idaho State Horticultural Association.

WILL YOU be so kind as to advise us as to who manufactures the branding machine the Skookum Association used last fall in branding apples. Will the machine work on soft fruit or vegetables, such as a tomato, for instance?

J. W. W., Wash.

The address is, Fruit Branding Corporation, Corporation Building, Los Angeles, Cal. Another branding machine, used particularly on walnuts, is put out under direction of A. L. Wysong, Care California Walnut Growers' Association, Los Angeles, Cal. We are advised that the electrical machine used by the Skookum Association would work satisfactorily on soft fruits or vegetables.

Your January number of BETTER FRUIT and, in fact, all numbers are O. K. You now got the "Idaho fever."—E. Oldfield.



Kills prairie dogs, ground hogs, ground squirrels, pocket gophers. Saves alfalfa. Experimental stations approve. 1000 tablets P. P. \$1.50. Warranted. Ask your druggist or send direct. Booklet Free. Address FT. OODGE CHEMICAL CO., Ft. Oodge, Iowa

LET THE LITTLE FELLOWS PAY OFF YOUR MORTGAGE.

Silver Fox Ranches Make Big Profits
Finest Quality Imported Prince Edward Island Stock
All Pedigreed and Registered Fully Guaranteed.

Full Particulars Free. Write Today United States Silver Fox Farms Corporation 209 1/2 Hutton Bldg. Spokane, 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. Catalog mailed on request.

Hendrickson & Scudder

Attorneys at Law

610 Spalding Building, Portland, Oregon

Attorneys for Better Fruit Publishing Co.



The ARCADY Company Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 11 1/4 Jefferson St. • Portland, Oregon

Also PRINTING MULTICRAPPING ADDRESSING MAILING LISTS MAIN 8829

This Publication is a product of our Printing Department



Cletrac Is At Home Among The Trees

CLETRAC is low-set and smooth-bodied. It slips in and out among the trees with short quick turns—comes about at the end of the row in less space than a team requires. Standing only 13 hands high—with no projecting lugs to catch low-hanging branches or scrape and bruise the bark—Cletrac is the ideal "orchard tractor."

With a Cletrac to turn under your cover crop, you can work right up close to the trees. This tractor leaves no patches of unplowed ground that so often make orchard plowing a half-power, half-horse job.

After plowing, Cletrac follows through with discing, fertilizing and lime-crushing. Its broad tank-type treads carry it lightly over soft ground without slipping and packing—it gets through with your heavy spraying no matter how wet the soil.

Today Cletrac is the admitted leader in orchard work. More fruit growers every year are using it exclusively. Remember—there's no obligation connected with learning *all* about Cletrac's *proved* ability. We'll demonstrate at your convenience.

HARD THIS
WAY BUT-



EASY ON A TRACK
THE CLETRAC WAY

Cletrac
REG. U.S. PAT. OFF.
**TANK-TYPE
TRACTOR**

THE CLEVELAND TRACTOR CO.

"Largest Producers of Tank-Type Tractors in the World"

19145 Euclid Ave., Cleveland

PACIFIC COAST FACTORY BRANCHES

LOS ANGELES, CAL. SAN FRANCISCO, CAL. SPOKANE, WASH.

The World Our Orchard

“Throw Medicines to the Dogs.”

(Shakespeare)

EAT APPLES

Don't look at the Brands—all apples are good, some are better. Brands don't mean anything.

Whether packed in boxes or barrels or drygoods cases does not make them any the less healthy. Apples are nature's remedy and most efficient tonic.

Apples, like bread, are the UNIVERSAL FOOD.

Apples at breakfast are nature's tonic.

Apples at luncheon are nature's tonic.

Apples at dinner are better than any medicine for your digestive organs.

Apples immediately before retiring are nature's greatest and best dentifrice.

This advertisement is the first of a series of short and trenchant articles which we will publish from time to time, with the object of increasing the consumption of apples regardless of Brands or where they were raised. We believe this the only sane method of putting before the consuming public the real value of all apples, and increasing the sales thereof.

Our Market, The World

Steinhardt & Kelly

273-277 Washington Street

NEW YORK

102-106 Warren Street

Cordoba 2260 Buenos Aires
ARGENTINE

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.

BETTER FRUIT

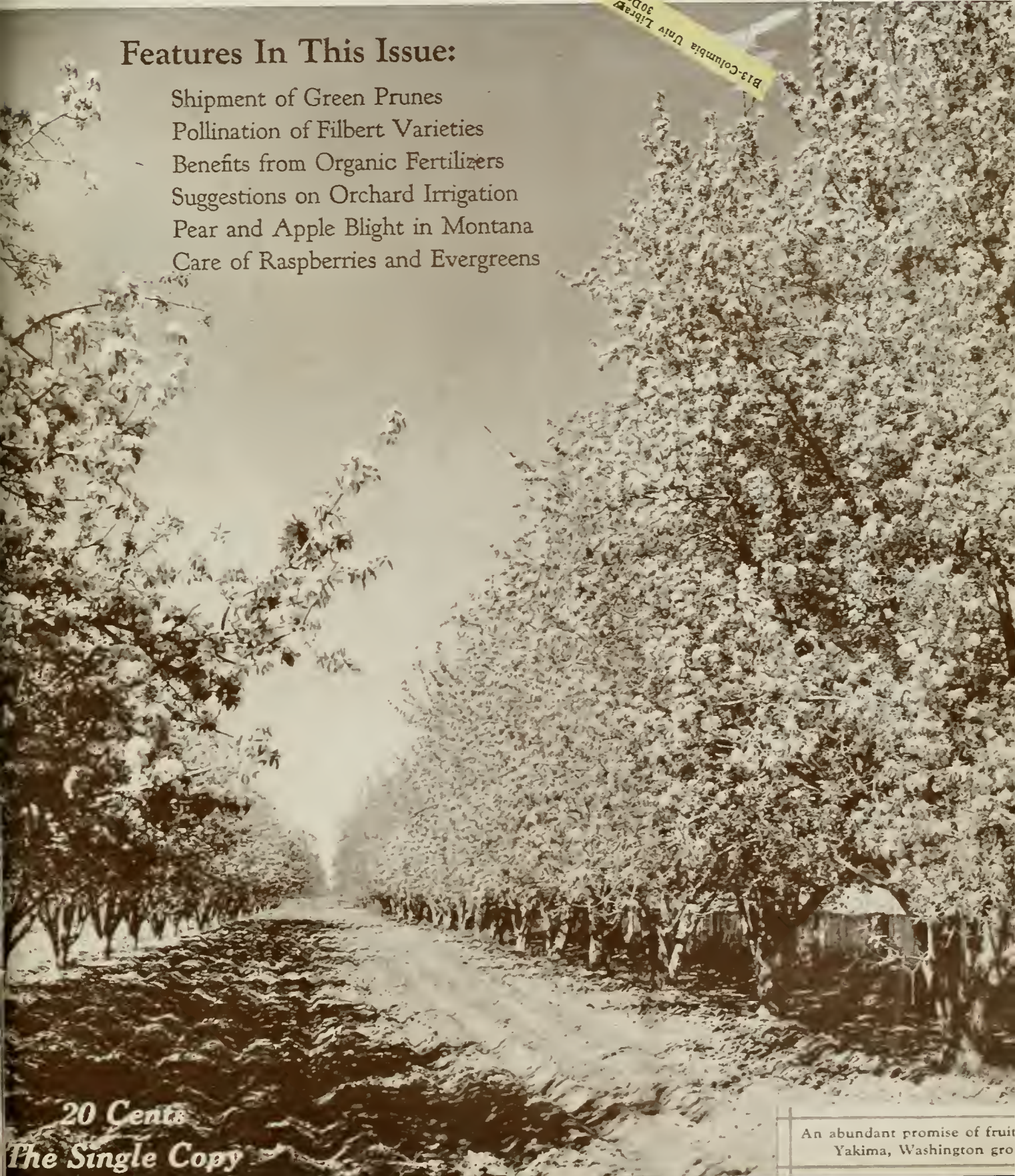
The Pioneer Horticultural Journal of the Pacific Northwest

JUNE, 1922

Features In This Issue:

- Shipment of Green Prunes
- Pollination of Filbert Varieties
- Benefits from Organic Fertilizers
- Suggestions on Orchard Irrigation
- Pear and Apple Blight in Montana
- Care of Raspberries and Evergreens

B13-Columbia Univ Lib
30 Dec 23



20 Cents
The Single Copy

An abundant promise of fruit
Yakima, Washington gro



Standard Indoor Transportation Systems



Boxes of apples being unloaded by means of our gravity roller conveyor to be sorted and re-packed for shipment.



Spiral chute delivering boxes on a gravity roller conveyor to shipping department for storage or transportation.

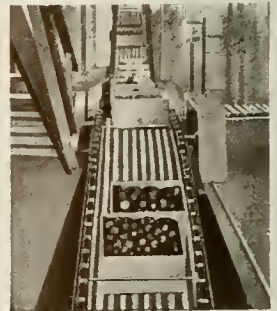
eliminate at least fifty per cent of the lifting, carrying or trucking of fruit in a modern apple packing or canning plant.

Our representative in your district will be glad to confer with you and show you how effectively a flexible Standard Conveying System can fit into your own specific handling conditions.

Write to our home office or to our representative in your district and get started the GRAVITY WAY. Act promptly so that you will be certain of securing the wonderful benefits of a Standard System for the summer and fall packing season.



Portion of Standard System installed in the packing plant of the Peshastin Fruit Growers' Assn., Peshastin, Wash.



Part of the Standard Conveying System in the plant of the Apple Growers' Union, Cashmere, Wash.

STANDARD
CONVEYOR COMPANY
NORTH ST. PAUL, MINN.

D. E. FRYER & COMPANY

421 Rialto Bldg.
Butte, Mont.

701 Gasco Bldg.
Portland, Oregon

Paulson Building
Spokane, Wash.

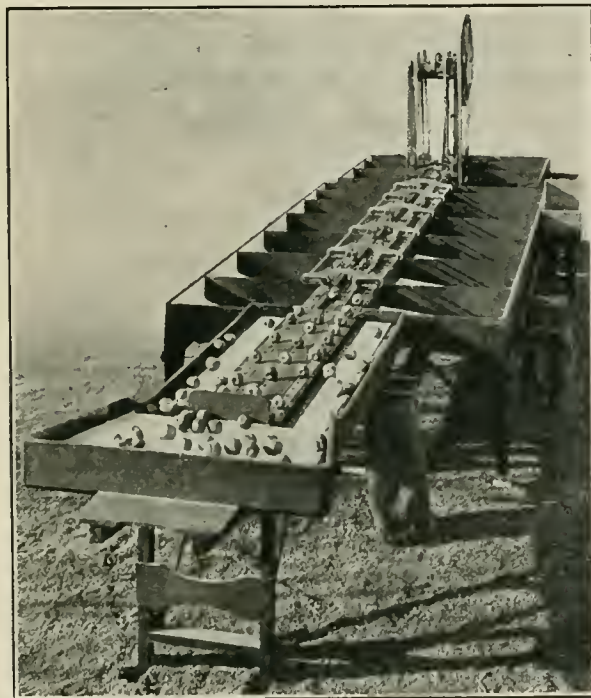
Lbr. Exch. Bldg.
Seattle, Wash.

We can't grow fruit —
No — it's not our business .

but our close association for the past fifty years with the successful Western fruit interests, as designers and manufacturers of their lithographed labels, cartons, containers, posters and all other forms of display advertising has clearly proven that **WE DO KNOW HOW TO MARKET FRUIT.**



SCHMIDT LITHOGRAPH CO.
Second & Bryant sts
SAN FRANCISCO



This is the
IDEAL FRUIT GRADER

THAT WAS ON DEMONSTRATION AT THE FRUIT EXPOSITION LAST NOVEMBER WHICH

was admired by everyone for the following features: Absolutely no bruising of the fruit. The most simple in construction. Nothing to get out of order. Noisless in operation. No springs or weights to adjust. Cost one-half of other makes. Workmanship of the very best. We can supply you in two, three or four grades machines to suit your needs.

We will be pleased to mail you our circulars and prices of the several different size machines we build. Also the name of the nearest agent to your place so you can see for yourself.

Do not wait until too late to get your order in like many did last season.

In writing mention the amount you will be packing so we can advise what size machine to use.

IDEAL FRUIT AND NURSERY CO.

GUIGNARD & SONS
Props.

HOOD RIVER,
Oregon, U. S. A.

The
1922

Cutler

FRUIT GRADERS

We have secured the exclusive manufacturing and sales rights to the Pogue combination lidding and stamping press.

The Cutler Manufacturing Company has seen a greater advance for 1922 than in any year since its organization. The 1922 graders are the most complete and reliable line of packing house machinery in the market.

Among a score of improvements is our new spring scale which has proven far more accurate than the old type of scale. It is quickly adjustable and has a numbered indicator which makes the adjustments visible and definite.

Other new features are a two piece carrier-cup, a friction drive pulley, an automatic takeup for the carrier and many others.

Cutler Manufacturing Co.

Portland

Oregon

Cutler Manufacturing Company,
Portland, Oregon
Gentlemen:

Kindly forward me your 1922 catalog, and other material regarding Cutler Grader.

My 1922 crop will run approximately

.....
Name

Address



BETTER FRUIT

The Pioneer Horticultural Journal of the Pacific Northwest

Entered as second-class matter April 22, 1918, at the Postoffice at Portland, Oregon, under act of Congress of March 3, 1879

VOL. XVI

PORTLAND, OREGON, JUNE, 1922

NUMBER 12

Suggestions on Orchard Irrigation

METHODS by which irrigation water should be applied to orchard lands vary considerably under the influence of the systems of cropping, slope and physical characteristics of the land. Shallow furrows, deep furrows and borders are well suited for moderately sloping land while deep contour furrows, flooding through thick stands of alfalfa or clover and in extreme cases, sprinklers should be used on steep land.

Since the shallow furrow method of applying water is in common use it requires no explanation. It is at present used practically on all types of soil and slopes of land. The practice, however, can be abandoned to advantage in some instances for better methods.

Shallow furrows are necessary for the most efficient distribution of water in row crops, for irrigating coarse, sandy soils under clean cultivation, and for moistening the surface of land sown to clover and similar crops. In coarse soil the spread and rise of moisture is not extensive. This renders it necessary to apply the water near the surface by means of shallow furrows placed close together to insure even and thorough distribution of the moisture in the soil.

Under such conditions the water should be run for a much shorter time than on finer soils. If this is not done heavy losses result from deep percolation near the flumes. It is important to have the furrows short. For sandy land, 200 feet is a desirable length and 400 feet is the extreme limit. On heavy soils, in which loss of water by deep percolation does not take place readily, the furrows should be much longer.

USE OF DEEP FURROWS—Deep furrows, for a number of reasons, are preferable to shallow furrows for orchard use. They should be extensively employed for land under clean cultivation and for steep slopes. By using deep furrows in clean cultivated orchards, the irrigation water can be used without wetting a great amount of the surface of the soil. Cultivation can be practiced immediately following irrigation, thus filling the furrows and covering the wet soil, a practice which is necessary to

Methods of applying irrigation water to orchards have important bearing on results the grower in an irrigated section may obtain. All too frequently the orchardist lacks dependable information on the subject. In such cases he usually accepts the practices of his neighbors without particular thought to basic fundamentals. While superintendent of the Hood River Experiment Station, R. W. Allen made an excellent report on orchard irrigation practices. The article following is taken from this report. The suggestions and applications, though based on practices in Hood River Valley, apply in large measure to other irrigated fruit sections.

prevent baking. This can not be done where shallow furrows are used and the surface of the land becomes wet.

Deep furrows do not need to be as numerous as shallow ones, and the water can be permitted to run longer in them with desirable results on all but coarse soils. The length of time the water is permitted to run, however, should be very closely watched for it differs materially with the character and condition of the soil. Three to five deep furrows for each space will give satisfactory results in irrigating most orchards. The number can be varied from a maximum of five to a minimum of two or three when the organic content of the soil is increased and its physical condition improved, for under such conditions the water will be found to enter and spread rapidly through the soil. Furrows of this character can be made with an ordinary turning plow, with a single shovel plow, or with multiple shovel furrowing implements.

APPPLICATION of water by means of deep furrows is claimed by some authorities to cause deep rooting. Whether or not this result actually occurs it is evident that by using deep furrows on the

finer soils, they become well moistened and will meet the demands of deep or shallow rooted trees or other plants and establish conditions favorable for the growth of roots at considerable depth.

Serious objection to the use of deep furrows is frequently voiced on account of numerous roots being destroyed in making them. It is, or soon will be recognized that plowing is necessary in most all orchards where the practice of shallow cultivation has been followed. It is evident, therefore, that deeper cultivation will be introduced, under which conditions there can be no objections to the use of deep furrows for irrigating.

Numerous observations of plowing in orchards not previously given to deep cultivation have shown that many small and medium sized roots were destroyed. Where such orchards have been properly irrigated and otherwise cared for, however, no detrimental influences appear to have resulted. It is not advised that deep plowing should be practiced the first year the plow is introduced in the orchards, but by gradually deepening the operation, a final state of cultivation that will permit of deep and effective irrigation can be accomplished without injury to the trees. When laid out on steep land in such manner as to modify the fall, furrows six to nine inches in depth will carry the water and render contour irrigation possible while it is not feasible with shallow furrows.

TIME TO IRRIGATE—To determine the time at which water should be applied a close study is necessary in order to know the approximate amount of moisture the soil contains. A superficial examination of the soil or an endeavor to judge from the appearance of the trees as to when they require water, does not convey a correct understanding of the conditions under which the trees are working. The first practice might result in the irrigation being applied prematurely, thus resulting in the waste of water and time. The second practice invariably results in a measure of drouth existing before the trees show signs of distress.

Ordinarily, irrigation should be applied before the soil begins to fall apart after be-

ing pressed firmly in the hand. Its falling apart indicates an insufficient quantity of water present to hold the soil particles together, which in turn indicates a scarcity nearly critical to plant growth. Since trees feed to a considerable depth, it is important to know that sufficient moisture is present at all times to the full depth of the roots.

FREQUENCY OF APPLICATION—The frequency with which water should be applied to a soil depends on the amount that it is capable of storing, the extent of loss by evaporation and the quantity used by the crop. When the capacity of the soil to retain the moisture is small, as it is in coarse shallow areas, the length of time it can maintain normal crop growth is proportionately less than for a soil having greater storage capacity. Orchards on coarse sandy soils require irrigation at intervals of ten to fifteen days during the active growing season. Those on silt and clay loams usually require two to four irrigations a year.

One irrigation applied in May or June might suffice on very retentive soils, but it is better practice to irrigate oftener and use less water at each irrigation. In this way a more uniform moisture content of the soil is maintained. Where orchards are found to require irrigation at intervals of two, four or six weeks, it is reasonable to expect that they would require irrigation at approximately half this period when two full crops are drawing from the supply. This point is often not fully appreciated by growers who place clover or alfalfa in their orchards.

AMOUNT OF WATER—The proper amount of water to apply depends upon the capacity of the soil to absorb and retain it. It is advisable to apply as much at each irrigation as the soil, to the depth from which the crops are capable of feeding will hold without loss of drainage. This quantity varies from approximately three inches in depth of water on sandy soil to eight or more inches for silt or clay. The capacity of any soil of any type is influenced by its depth. Therefore the amount of water to apply must be determined by experience for each tract of land. To apply less water than the soil is capable of holding unless near the close of the season, is inadvisable. By so doing more frequent irrigation becomes necessary with a consequent increase in labor cost and loss of moisture by evaporation. On the other hand care should be taken to avoid over-irrigation.

Experiments carried on by the irrigation investigations of the U. S. Department of Agriculture in a Southern California citrus orchard, irrigated with furrows 660 feet long, shows that at the upper end of the furrows the water had percolated down to a depth of 27 feet, while for the lower half of the furrows the depth of percolation was only about 4 feet.

Irrigation investigations in Idaho showed

that where the length of run was 2359 feet, it required an average depth of flooding of 1.6 feet for a satisfactory irrigation, while with runs of 237 feet the average depth of water for a thorough irrigation was only 0.7 feet, or a saving of 56 per cent.

It is probably safe to assume that the loss due to deep percolation will average no less than 25 per cent of the water delivered to the farm.

To decrease the loss by deep percolation, a remedy is to divide the field or orchard into short runs, the length depending upon the character of the soil, and to run the water more quickly in the furrows or over the field by using larger heads, especially for porous soils. This will usually require the practice of rotation at least for the smaller farms or orchards, which has the added advantage of decreasing the conveyance losses and of shortening the length of time involved in applying the water.

Little need be said of the harmful effects of over-irrigation. Such a practice results in waste of water, leaching, loss of soil fertility, water-logging low lands and smothering out vegetation. It also causes a very undesirable physical condition of the soil. Over-irrigation can be largely avoided by careful management.

Oregon walnut growers are seeking to have congress make an appropriation of \$2,500 to enable the Department of Agriculture to send an expert to study walnut growing in China and Manchuria. It is said that 7,000,000 pounds of nuts were imported through San Francisco, from those countries last year.

Cherry Experiments

THE most extensive and important cherry pollination tests probably ever undertaken have been under way the past few weeks in Wasco County orchards around The Dalles.

Under the direction of C. E. Schuster of Oregon Agricultural college the stamens of 450,000 cherry blossoms were removed and the blossoms covered with paper bags, as the first step in the experiment. All of these blossoms are on trees of the Royal Anne, Lambert and Bing varieties, which are both sterile and intersterile.

Pollen from all other known varieties of sweet cherries, some sour cherries and a few seedlings, was gathered by a corps of women assistants for use in artificially impregnating the emasculated blossoms. Each was covered with the paper bag, following this operation, and is allowed to remain that way until the fruit sets when it will be possible to determine the percentage of fertility of each of the pollenizing varieties, upon the sterile varieties. By these records it is hoped definitely to settle the question of the proper kinds of pollenizing trees to plant in orchards of Bing, Royal Anne or Lambert cherries.

It is reported that the acreage of vegetables planted this season by members of the Eugene Fruit Growers' Association is 332, as compared with 100 acres last year.

An experimental apple orchard of six acres is being set out by the Washington State College near Prosser, Wash.



Arrangements for trellising in this raspberry yard are good enough but the owner has neglected approved practices in not cutting out the old canes in the fall and cutting back the new ones.

Care of Raspberries and Evergreens

By J. L. STAHL

Horticulturist Western Washington Experiment Station, Mt. Vernon

THE CUTHBERT raspberry will usually produce three tons to the acre when the berries are grown most intensively. The Cuthbert has the best flavor of the four varieties commonly grown, and is the one berry the canneries call for more than the Antwerp, King, or Marlborough. The newer plantations being made in and around Puyallup and Sumner are of the Cuthbert variety.

I have picked out typical soils in that valley on which berries are commonly grown. One that is commonly called the Cuthbert soil is a light sandy loam. The heaviest soil we have in that valley on which we grow some of our other berries, particularly the Evergreen blackberry, is the heavy clay. Some of the Evergreens are also grown on the muck soil because we have a great deal of muck soil and the raspberry doesn't do so well on that soil as does the Evergreen.

In our system of growing berries the plantation is laid off in rows seven feet apart. That is our common distance used for planting the berry in Puyallup valley. The red raspberries are set 30 inches apart in the row, that requires about 2800 plants to the acre. We run out a furrow and set the plants in that furrow at a six-inch depth so that the root system is in the ground four to six inches deep. We cut off the cane so it is only one or one and a half feet high above the crown of the plant. Setting the plant is very important. Be sure that the dirt is well firmed around the crown and roots of the plant.

The first season the plants are grown without a trellis, cultivation starting as soon as they are set out. Usually they grow about three to four feet tall, and we will have three to five canes about that height by the end of the first growing season.

After setting the plants we continue cultivation about once in three weeks until about the first or the middle of May, and then we cultivate once in two weeks or ten days during the growing season. About August 1, we stop cultivation, then in the fall we plow towards the rows. This is chiefly for drainage purposes. The fine soil that is thrown toward the plant or hills keeps down weeds between plants and hills and the dead furrow in the center serves to carry off surface water from our heavy rains. This fall plowing is usually done about November. In the spring we plow away from the plants in February or early March.

We thin out the young shoots when we have six or eight shoots about 18 inches high. We retain the remaining one for our next year's crop and keep out the later canes that develop. In a three or four-year-old plantation we often have 12 or 13

While there is no great disparity in methods of planting and caring for the cane berry crops it is of interest to even the smaller isolated growers to know the practices employed in the finest berry districts. Professor Stahl here explicitly outlines the most successful methods of planting and caring for red raspberries and Evergreen blackberries in the famous Puyallup-Sumner district in Washington. Points that are emphasized may be found greater factors for success than the average small grower imagines.

produced in one hill. We like to keep just the number we want to produce next year's crop, six to 10 new canes being the most we like to leave. Oftentimes we do leave two or three extra canes over and above the six to 10, then in case we have some injury we have from six to 10 which will bear a crop next year.

BEGINNING with the second year, we put up a trellis. We believe in the trellis system in berry growing, because it is easier for the picker.

We use four wires on cross-pieces—commonly two wires will do just as well where this plan is used—and we do not use cross-pieces if our posts are thick enough as when we use the 10-inch post. These posts are set two rods apart in the row.

If we have a six-inch post we put on a cross-piece, so we have our wires 14 to 15 inches apart for our trellis. Then we weave the plants on these two wires, number 14 wire for red raspberries. Put the wire about four to four and a half feet high. Our experience is if you put wires too high the berries will not be picked as readily.

In weaving, divide the hill, carrying half the canes on one side and half on the other. The canes are all pulled on the outside of the wire, carried up over the wire, down and on the near side, then tied with a string when we start weaving at the end of the row. After that, no tying up is necessary the entire length of the row. Usually take about three canes, carry them up over, down under and tie them; take three more, carry up over, down under and under the canes just ahead, very similar to the manner of weaving baskets.

Another plan is to weave on just one side, allowing the one wire merely to hold the canes in place. The objection to the single wire in weaving is that you are carrying your canes a little more than you will with the other plan. If you have plenty of wire,

the lower wires will aid in holding canes in place, but with double wire interweaving it is not necessary to use four wires.

There is another plan, just to carry the canes instead of weaving them to a wire and tying each individual cane with a string. That requires quite a lot of hand-work, even more than the weaving. The most common method is that where weaving is practiced.

After the harvest season we cut out the old canes, allowing the new canes to stand between the wires until the following spring. We have the worst winter injury where we do not cut out the old canes until next spring. We train the vines in February, just before the buds start in the spring when the canes will bend without breaking. If we weave in the fall, the canes are more apt to break.

In the fall we cut out the old canes, about two feet above the ground, leaving the stub. Then in the spring we break that off clear down. If you try to cut out the old canes right after harvest you will have to leave a little stub because that cane is not entirely dry, then go through on your hands and knees next spring and break off that stub. Instead of that we like to leave the stub long enough so we can pull the cane without getting down on our hands and knees.

WE SET Evergreen blackberries about a yard apart in the rows with the rows seven feet apart. At Puyallup we are growing more Evergreen and that is the one berry that is there to stay. We secure yields of about six tons to the acre, often seven to the acre, so you see it is a paying crop.

We set the plants 16 to 18 feet apart. The new canes may be carried on a trellis about two feet in height in the summer, and the following spring, in February, carried up and put on a double wire trellis about four feet in height. The upper trellis on which the bearing canes are trained is made of number 12 wires. The trellis on which the new canes are trained can be made of number 14 wire.

We support the canes by means of cross-pieces. The cross-pieces for the bearing trellis are 20 to 22 inches in length, in the trellis for the Evergreen blackberries—for the young canes about 14 inches wide. If we have a narrow trellis, of 12 inches, we will have a great many of those side arms broken and the fruit will not mature. They will break down. If the trellis is wide, they will grow out laterally.

Some of the growers instead of training the new canes underneath, use eight foot posts for trellising, with two feet in the

(Continued on page 21)

Benefits From Organic Fertilizers

By MAJOR E. P. NEWSOM
Chemist and Lecturer on Soils

PLANTS and trees need a well balanced ration of food, just as animals do. A hog allowed to roam wild in the woods, feeding chiefly on roots, will run mostly to head, tail, bristle and bad temper.

The theory that we should analyze the soil and supply the particular plant food lacking has not worked out successfully in its application to our orchards and farm crops because an analysis of the soil may reveal the existence of an abundance of plant food, phosphate and potash, for instance, but in an unavailable form. We know that rock phosphate, however finely it may be pulverized, is not soluble in water.

Most of the potash in the soil is derived from granite, in which it occurs as a double silicate of aluminum and potassium and is absolutely insoluble in water. The same is true of calcium carbonate or limestone. In fact, were these elements soluble in water alone without the intervention of any other agency, they would leach down so deeply in the soil within the space of two years that then the ground would not sprout cowpeas.

In experiments of the Pennsylvania station, carried on for a period of thirty-five years, the greatest yields of crops were due to fertilizing with a well balanced fertilizer, containing not nitrogen alone, but also soluble acid-phosphate and potash. It was found, that although the analysis revealed the soil to be unusually rich in phosphate and potash, whenever either the potash or phosphate, in soluble form, was omitted from the fertilizer the yield of crops was greatly lessened.

The chief agency in rendering plant food in the soil available is CO₂, or carbon dioxide. This is generated through bacterial action in the process of the decay of vegetable or animal matter in the soil. It is also derived from the atmosphere and finds its way into the soil by means of the rain which carries it in solution. But the bacterial action is slow and does not supply, even with the aid of alfalfa or other cover crop, the needed carbon dioxide fast enough to prevent the "skip" crop every other year.

Some people make the mistake of concluding that nitrogen is the only thing needed in a fertilizer. This conclusion is equally as erroneous as the first one. In increasing the leafage the first year through resort to nitrogen-producing bacteria there is the chance that there may remain a slight overplus of availability of other plant food, due to bacterial action. But when you continue the process over any measurable period of time you lay too heavy a burden on the backs of the bacteria, and the poor bacteria will feel greatly grieved, I am

Since Major Newsom submitted this article has come the entirely unexpected news of his death in Spokane, Wash., on May 12, at the age of 55 years. His writings in BETTER FRUIT have, we believe, carried real educational value. He was a true friend of the fruit industry and gave to it of his talents. Prior to his connection with the Marine Products Company of Tacoma, as chemist and lecturer, he had served many years in the United States army as a chaplain and officer. He participated in two campaigns in the Philippine Islands. He was buried with military honors at the Presidio, on May 16.

sure, and their dispositions will be well nigh ruined, to think so much was expected of them!

The Encyclopedia Britannica states that at Rothamsted Station, England, organic fertilizers were used for a period of fifty-one years, resulting in the average yield of wheat of 37 bushels per acre as compared with an average yield for the same period of only 13 bushels on the same kind of soil unfertilized. The same results were obtained at Woburn, England, for a period of 31 years.

As a further fact it is stated that the good effects of organic fertilizers on the soil could be seen for fifteen years after their use was discontinued. On the other hand, in Pennsylvania, where the strictly chemical, or inorganic, fertilizers were used for several years, it was seen that when their use was discontinued, the soil was found to be dead. In other words, that it would not respond with a yield of crops without the fertilizer. Dead soil is simply soil where the bacterial life has been destroyed.

Chemical, or inorganic, fertilizers, while at times useful as a tonic for "sick" trees, tend to destroy the bacterial life of the soil by their residual effects. Their use is advocated on the ground of cheapness and the "quick kick" they have. So also morphine and cocaine have a "quick kick" and for a few minutes the victim imagines he is a millionaire and that in comparison to himself John D. Rockefeller is a hump-backed mendicant, but the drug soon kicks the victim into inefficiency and degradation and makes of him a parasite and an unproductive citizen.

So also some of our orchardists who are

continually experimenting with soil drugs will find their orchards "kicked" to much less than their normal productivity. It does not change the final results for someone to say that for several years, by the grace of an abundance of rain or water to wash the after effects out of the soil, he got good results. Many a man or woman has kept his or her back from aching by the use of morphine for several years.

Now organic, or animal products may cost a little more initially, but are more economical in the end, because not being water soluble, but breaking down under moisture conditions gradually, through bacterial action, are more lasting, while not leaving in the soil hurtful residual effects. They not only furnish available plant food to the tree, but immensely stimulate and invigorate the bacterial life of the soil and thus very much increase the production of carbon dioxide. The latter in turn is the potent and necessary agent by which other plant food in the soil is rendered available. The organic fertilizers render a double benefit.

If any further proof were needed to substantiate these statements, I would invite your attention to the very remarkable discoveries made in Germany during the past few years relative to the great importance of artificially fertilizing with carbon dioxide. I hope you have been fortunate enough to have read an article contained in the *Saturday Evening Post*, of last October 1st, entitled "Raising Bumper Crops in Germany with Poison Gas."

BRIEFLY, in 1917, German scientists undertook experiments in fertilizing artificially with CO₂. The results were most encouraging. But it remained for Friedrich Riedel, a German engineer, to carry out the experiments on a large scale under the most favorable conditions.

At the great smelting works of Stinnes, in Luxemborg, he laid perforated concrete pipes, fifty centimeters in diameter, into fields through which filtered and purified carbon dioxide was forced by electric fans, the fields being planted to various crops. Nearby, he erected glass covered enclosures, through which carbon dioxide was sent through perforated tubes above ground furnishing 5 per cent of carbon dioxide. The results, of course, were greatest in the glass covered enclosures, since in the open fields much of the carbon dioxide was blown away by the winds.

The first and most important result from the artificial use of the carbon dioxide was the greatly increased leaf growth. The leaves of Riedel's gassed plants were larger and their stalks thicker and firmer. In some cases the leaf area was increased by

(Continued on page 25)

Pollination of Filbert Varieties

By C. E. SCHUSTER
Oregon Agricultural College, Corvallis

IN DISCUSSING the question of pollination, we will take the term pollination merely to mean the operation which the pollen grain is placed on the pistil of the female flower. Fertilization is the union of the male and female gametes.

In considering the pollination of the filbert, we find more different difficulties than are connected with any other nut or fruit commercially grown in the Pacific Northwest. In addition to being one of the group that depends on the wind for pollination, the filbert blooms during that part of the year which is not usually considered ideal blooming time. The filbert ordinarily blooms during the rainy season, or the period during which rains are more or less common.

Insects are not essential for cross-pollination as with other fruits. The pollen being borne in separate flowers, is carried to the pistillate flowers by the wind. Being of a nature that rapidly absorbs water, the pollen grain cannot be disseminated except during those periods or times of the day when the moisture is least prevalent. Wet pollen cannot be blown or scattered about by the wind.

The catkins are formed during the late summer and held on the tree until January and February, when the pollen is shed. Each catkin contains, on the average, about 150 bracts and in each of these we found about 8 anthers. Figuring that 1000 pollen grains are found to the average anther, we see that there is possibility of over a million pollen grains being produced by one catkin. It gives a great abundance of pollen, but this is necessary when we consider the possibility of the floating pollen grains lighting on the small individual pistillate flowers.

The pistillate flowers are contained in separate buds and are not evident until considerably later than the first catkin appear. With the earliest varieties we find the first appearance of the pistillate flowers to be around the end of November or the first of December, while some varieties do not appear for some weeks after that. Although the earlier varieties show the pistils the first part of December, the full growth is usually not made until the latter part of January and February. In each bud we find from nine to ten pistils, or separate female flowers. From each of these there is a possibility of developing a single filbert so that we find large clusters of nuts where the pistils have been well pollinated.

After a pollen grain is placed on a pistil it begins to germinate almost immediately and makes a growth down into the tissue of the pistil. After growing a short distance into the pistil the nucleus encysts and remains in this state for from four to five

Filbert culture is a comparatively new branch of nut growing in this country. Little has been written on the subject and there is much yet to be learned. Professor Schuster made a distinct and valuable contribution to existing funds of information about the filbert in studies of its pollination habits pursued last year. His discoveries, as reported to the annual convention of nut growers, may seem a bit technical. They are quite understandable, as a matter of fact, and point out methods of planting that seem of vital importance to everyone who undertakes filbert growing in the Pacific Northwest.

months. At the end of this period the growth is continued and the fertilization takes place.

From now on we will make no further mention of this question of fertilization. This then gives us a condition where pollination occurs on an immature pistil or undeveloped female organ and the male gamete, or nucleus of the pollen grain, is forced to wait for the development of the female part or gamete.

Usually the pistillate flowers of the main varieties are out and fully developed before the catkins begin shedding the pollen. But, since it is well known that the different varieties produce pollen at different periods, we often have the condition of pollen from a variety falling upon the pistil of another variety before the pistils have developed their full growth. The exact state of receptivity of the pistil

is not known, but on February 3, 1921, a number of blossoms were hand-pollinated. At this stage the pistils were a little more than through the bud scales and it was two weeks before they were considered fully developed and in fine condition to receive the pollen.

SEVERAL varieties were used for cross-pollination at this time. With the varieties that gave good results when used for cross-pollination at the later time, at which the pistils were fully developed, practically the same results were obtained with early pollination. In other words, the pistils were receptive shortly after making their appearance, and will not reject the pollen before they reach a state of maturity.

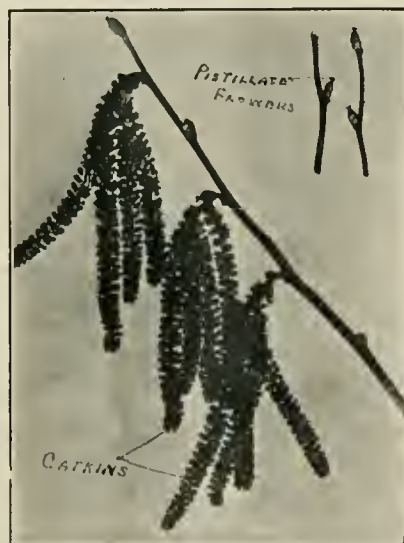
With the blossoming season coming during January and February what insurance have we against rainy weather at this time? Pollen being light and blown about by the wind, it stands to reason that rain is detrimental to its distribution. So means of circumventing these rains must be considered.

In the first place, the blooming season of the catkins, or male flowers, is long, considering other fruits. Not all the pollen is mature at one time. The development of the catkin is progressive from the upper end to the lower part and is rapidly increased by warm temperature. With the progressive development and cool temperature at this time of the year, the shedding of the pollen is thus spread over a relatively long period.

Pollen is viable over considerable periods. As it is first shed it gives a high test of germination, decreasing at a rate of about one per cent per day for the first fifteen days and decreasing more rapidly after this, so that by the end of thirty days it is down to about 25 per cent viability. Thus, the catkins may mature and hold the pollen for some considerable time without any material damage to the pollen.

As the pollen is matured the anthers containing the pollen are split open, allowing the pollen to escape. If the time of maturity comes during a period of high humidity the walls of the catkins absorb so much moisture that it forces the sections together so opening cannot take place until the anther is partially dried out. If the anther should open and the catkin be moistened this same process or condition forces the halves of the anther together so the washing of the pollen from the catkin is partially prevented and the anther is able to hold the pollen until favorable weather conditions are at hand.

Tests at the experiment station show that the pollen is very resistant to atmo-



Catkins and Pistillate flowers of filbert at blooming time.

spheric and climatic changes. Immersion in a film of water will cause pollen to germinate somewhat and we may consider moisture the worst enemy of pollen that we have.

Germination or growth of a pollen grain occurs within a short time after immersion in a suitable liquid. It has been found that 90 per cent of the pollen will be germinated in four hours at 65 to 70 degrees F. and a little less at 50 degrees. As light or darkness has but little effect on germination of the pollen, the main thing is to have a period of time long enough for the catkin to dry out and the pollen to be shed. Therefore, if there comes a period of comparatively dry weather followed by light rain, but not heavy rains, we may expect pollination to take place. The surface of the pistil is very rough and it would undoubtedly require a rather heavy rain to wash off the pollen.

Pollen grains are resistant to cold temperatures until they are subjected to the extreme temperatures such as those of December, 1919. Exposure to temperatures of zero for 96 hours only reduced the germinability or viability of the pollen about 12 per cent. From this we can deduce that frosty weather is of less moment than rainy weather. However, when we consider the season of 1921 and its excessive rainfall and then see the average crops of filberts that have been produced we are fairly sure of a good crop of filberts under any but the worst conditions.

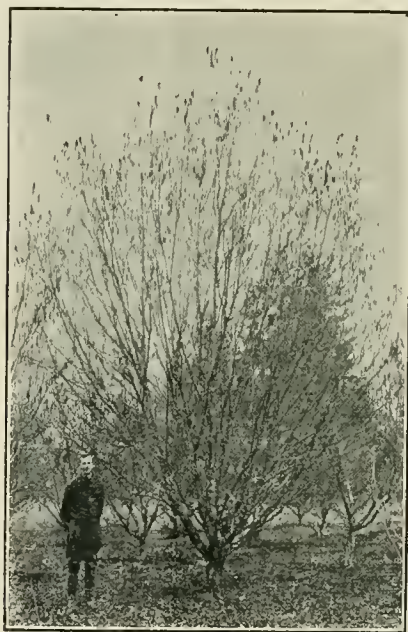
After considering the catkin and the pollen what of the pistillate flowers? The pollen may be washed off the pistils, but it is doubtful if any other extensive injury from rains can take place.

The pistillate flowers are more susceptible to low temperatures than is the pollen. Where pollen was little injured at zero in 96 hours, the pistillate flowers had 90 per cent of the stigmas or three-fourths to one-half of the pistil that is exposed killed. A temperature of 15 degrees killed 20 per cent in 12 hours and 25 per cent in 24 hours. Thus, it appears that the pistillate flowers are much more susceptible to low temperatures than the catkins. It would seem that it might be wise to avoid some of the worst frost pockets instead of advocating the planting of filberts anywhere west of the Cascade mountains, irrespective of air drainage. During the last ten years we have had temperatures below 15 degrees.

The main question, then, is one of pollination. In all of the literature available, little or nothing is said of pollination. E. A. Bunyard of England says, "No work has yet been done to test the self-sterility, or otherwise, of nuts, but judging from large orchards, one would assume that the commonly grown varieties are quite self fertile." Other references than this one amount to little, so it can be assumed that the pollination question is not a serious one, either from the fact that European growers generally have planted more than one

variety, or that the varieties there are really self-fertile.

TESTS carried on during the past two years have not shown any variety of filberts that was self-fertile. On the Barcelona this past year 306 pistillate flowers were sacked and allowed to self-pollinate. Two nuts resulted; 112 Daviana flowers were selfed with no nuts resulting. Seventy-two Duchilly were selfed with the same results. One-thousand and seventy-three pistillate flowers of thirty-one separate varieties, in addition to those mentioned, were also selfed and twelve fruits resulted or about one per cent of the blossoms set fruit.



Giant Daviana filbert, 16 years old, 23 feet tall and having spread of 20 feet. (Cuts by courtesy Oregon Grower.)

To check the percentage of fruits borne from self-pollination, counts were made of blossoms that were wind pollinated. These were made in different orchards and on different varieties. In one orchard it was shown that 37 per cent of the blossoms set fruit. In another 57 per cent of the blossoms set fruit. This would indicate that the one per cent set from self-pollinated blossoms would not form more than a small per cent of the crop.

Further work is necessary, but it would seem from last year's work that the filbert sets fruit on a very high percentage of its blossoms. One thing, then, that must be considered is the necessity for continually producing vigorous new wood, as this wood is most productive of both types of flowers.

Since all varieties are self-sterile it must then be a problem of cross-pollination. With other fruits we find that some varieties cross-pollinate to good advantage, while others are inter-sterile. This condition exists in the filbert. Taking the Barcelona we find that all of the common varieties

will cross-pollinate it to a certain extent; some more, some less. There are some lesser known varieties such as the Fertile de Coutard that are entirely inter-sterile.

One of the best pollinators is the Cosford, a variety little known. This resembles the Daviana. The Du Chilly has uniformly given good results and, due to the fact that it is a good commercial variety, is undoubtedly one of the best for this purpose. The one drawback comes from the fact that it blooms considerably later than the Barcelona.

With the Du Chilly, the varieties that have been recommended by the different growers all work fairly well. Again the best results for last year were with little-known varieties. Further tests are necessary to show whether or not they are enough superior to warrant attempting to propagate them to any extent. None of them that gave the best results on the Barcelona or Du Chilly are heavy enough bearers to be really commercial varieties.

This brings us to the question of inter-planting. Before taking that up we must consider how far the pollen will be carried and also the proportion of pollenizers to plant.

Some trees were stripped of their catkins and left to wind pollinate. Those over 100 feet distant bore less than one per cent nuts. Although light, the pollen evidently does not carry very far. In observations in the field it seemed that trees plant 40 to 60 feet from a pollenizer bear good crops, though the ones at 60 feet sometimes appear light. From evidences at hand it would seem that the trees should be more than two trees distant, from the pollenizers, that is when planted 20 to 25 feet apart. This can be accomplished in one way by planting in every third tree in every third row; one pollenizer to 8 of the regular variety. Thus this would give eight Barcelonas and one Du Chilly.

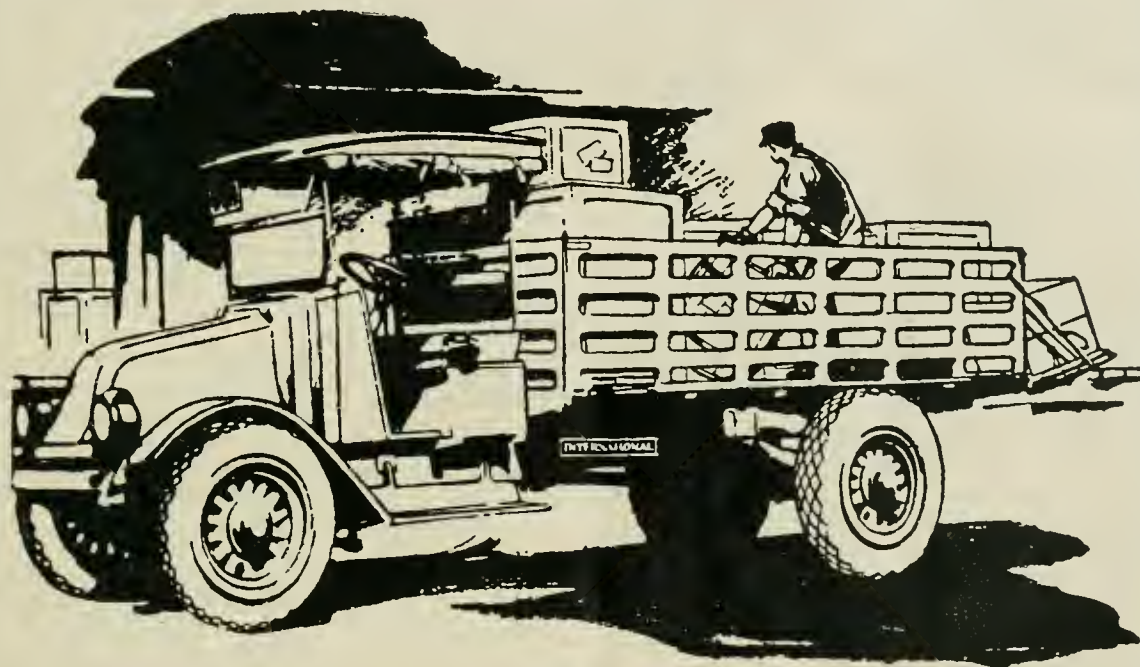
In seasons when the blooming time of Barcelona and Du Chilly are wide apart it is doubtful if the Barcelona receives full benefit of the pollenizing ability of the Du Chilly. An examination of the pistillate flowers last season showed that the stigmas of many Barcelona flowers had a dead, washed-out appearance before the Du Chilly was ready to shed pollen. Under these conditions it would seem advisable to have an earlier pollenizer.

The earlier blossoms would be taken care of by the early blooming variety while the later blooms would be pollenized by the Du Chilly. This would give vigorous, viable pollen for both early and late blossoms. The last pollen of the season is less viable than the earlier pollen. The question of blank nuts is a large problem some years and is unquestionably connected with some phase of pollination. A pollenizer that would come between the Du Chilly and Barcelona and pollenize both would give almost ideal conditions. There are several varieties that are good for one of the varieties and fair on the other.

THIS system of double pollenizing brings up another problem, that of arrangement. From previous evidence it would seem to be possible to plant three solid rows of Barcelonas, as this arrangement would put the trees not over two rows

from the pollenizer. Alternating with this could be a row composed of one late pollenizer, one early pollenizer and a Barcelona, thus giving 84 per cent Barcelona and 16 per cent pollenizer. This extra number of trees for pollenizing purposes reduces

the number of Barcelona trees, but the writer believes the benefit received from additional pollination will offset this. The main idea of the double pollenizer is to furnish an abundance of pollen during the
(Continued on page 22)



From Orchard to Market with International Motor Trucks

THROUGHOUT the growing and marketing season there are countless jobs that can be done quickly and to the best advantage with an International Motor Truck. It speeds up spraying, pruning, and cultivating by hauling tools and materials, and saves the time of several men in picking season by its greater capacity and speed in hauling the fruit to the central station. When the fruit is ready for market the International again comes into service and transports the crop to the shipping point safely, without delay or interruption.

Years of experience in building machines and tools for orchard and farm use stand back of the present highly-developed line of International Motor Trucks. All chassis parts are well-designed and built with a reserve to withstand the extra strains. The engine is powerful and accessible.

There are styles and sizes for every orchard or farm — capacities range from the 1500-lb. Speed Truck to the 10,000-lb. heavy-duty model. Special bodies for fruit hauling are available on all chassis.

For complete information see the nearest International motor truck dealer, or write for our catalog.

INTERNATIONAL HARVESTER COMPANY

CHICAGO

OF AMERICA
(INCORPORATED)

U S A

Branch Houses in 92 Principal Cities. Dealers and Service Stations Everywhere.

Pear and Apple Blight in Montana

By DEANE B. SWINGLE,

Botanist and Bacteriologist, Montana Agricultural Experiment Station, Bozeman

BACTERIAL blight of apples and pears was first seen in New York State about 1792 and since that time has spread over the entire United States, doing untold damage to pomaceous fruits. While the greatest destruction has been in the pear-growing valleys of California, the losses in apple orchards also have been very heavy. Certain parts of the Rocky Mountain region were the last to be invaded by this disease. It did not reach Montana until about 1905, when it made its appearance near Hamilton. The writer made strenuous efforts to get the disease stamped out, but received the support of only a few of the fruit growers, the others being unable to realize the seriousness of the situation. The State Board of Horticulture was not at that time organized to a point where it could handle the situation.

Apparently separate introductions of the disease were made, probably with nursery stock, into other parts of the state. At Miles City and at Laurel the blight had made such great headway before being reported that its eradication would have required much labor and expense, but at most other points it could have been eradicated at relatively small cost had the recommendations of the Experiment Station been carried out. In three instances the disease was so quickly brought under control that very little damage was done.

The spread of the blight through the apple orchards has been rapid, and thousands of fine, thrifty trees have been destroyed entirely. At the present time it may be found in every part of the state. This is, however, but a repetition of the experience of most other states throughout the country.

For a period of several years the State Board of Horticulture made a most determined fight against apple blight and succeeded in bringing it under partial control, largely by the wholesale elimination of very susceptible varieties such as the Transcendent crab. The disease now appears some years as an extensive twig blight, killing a few large limbs and trees, and some years as a very light and scattered infection, doing but little damage.

CAUSE AND SYMPTOMS OF BLIGHT—This blight is caused by a bacterial organism, a parasite quite unlike insects and fungi. It attacks principally the apple, pear, and quince. A very light infection that soon dies out may occasionally be found on stone fruits, and on service berry, hawthorn, and some other pomaceous shrubs. It never attacks willows, poplars, and other wild plants that are not related to the apple.

The blight germs gain entrance to the trees in several ways: (1) Through wounds

Bacterial blight in pear and apple trees, a disease difficult to control in the better organized fruit districts, has been even more troublesome in sections where orchardists are neglectful of approved practices. The article that follows carefully presents both the causes and the remedies. It should provide the incentive necessary to stir the owner of every orchard where blight makes it appearance to adopt the drastic measures by which it may be eradicated. Those contemplating new plantings will find here a helpful guide in the matter of susceptibility of varieties to the blight.

made by pruning tools, cultivators, etc.; (2) through bites of insects, particularly the green aphid; (3) through the open flower, to which it is carried by bees, ants, and other insects, and, as has recently been shown, by the wind. When once the germ gains entrance it multiplies rapidly and works downward through the bark, but may not cause any visible effect until weeks after the infection has taken place, so that the grower is badly deceived as to just when the disease was acquired.

The following symptoms are very characteristic: If the infection begins in a flower cluster or in the end of a shoot, as it usually does, the leaves first wilt and droop, then turn brown in the apple and nearly black in the pear. Soon they become dry, hard, and brittle. The bark of the affected twig likewise becomes slightly darkened in the apple and nearly black in the pear. The line between the diseased and the healthy bark is not sharp and distinct during the growing season, so that it is often difficult to determine just how far the disease has progressed; and it is usually farther than an inexperienced person would suppose. On cutting into the diseased bark one finds the inside at first pinkish in color instead of a healthy green, but when it has been diseased for a few weeks it becomes darkened through to the wood, which remains nearly white and normal. This is essentially a bark disease and will continue, in susceptible varieties, to run down the limbs and trunk into the roots, sometimes killing the tree outright in a single season. It practically ceases to spread downward at the end of the growing season and becomes dormant during the winter, but with the opening of spring activity is renewed and another stretch of bark is killed. This continues until the tree is completely overcome. Sometimes the attack begins in the water-sprouts at

the base of the tree. Under these circumstances it reaches the roots in a few weeks, where it can not well be treated, and the case becomes practically hopeless.

There is a general impression that plants or animals that are very vigorous resist disease better than those that are generally unhealthy and stunted. This certainly is not the case with apple and pear blight. In slow-growing trees the disease makes but moderate progress downward through the bark and generally dies out without reaching the larger limbs, while in very rapidly growing, vigorous trees it progresses rapidly, sometimes running through the bark from the tips to the roots in a single season.

OFTEN there may be seen on the blighted leaves and branches, and especially on the blighted fruits, a yellow exudate in tiny droplets, or even in larger quantities running down the tree. This contains enormous numbers of the germs of the disease and is freely visited and eaten by ants, wasps, bees and probably other insects, that carry it to other trees, especially to the flowers, where a fresh attack begins. A single bee may thus infect several hundred flowers during the season, and a swarm of bees could infect many thousands. This accounts in most cases for the very extensive and sudden attacks that many orchards have suffered.

When the healthy leaves have fallen in the autumn, those on the diseased twigs and branches still cling to the tree, where they are very conspicuous. At this time also the diseased bark has turned quite dark, especially in the pear, and the line between it and the healthy bark is more sharp and distinct than during the summer season. Here, in the deeper layers of the bark, in the line between the diseased and the sound tissues, the bacteria that cause the blight live over winter. On the assumption that they do not live over in the ground or anywhere else excepting the region just indicated, the following treatment is advocated by the United States Department of Agriculture and by many of the experiment stations, and is extensively practiced by orchardists with some measure of success.

TREATMENT OF THE BLIGHT—In a single sentence we can say that the only known method of curing a blighted tree is to cut out and burn all affected parts. This seems simple enough, but there are important details that determine between success and failure. As a matter of fact, very few inexperienced men are successful, largely because they will not pay close enough attention to these important details. The following rules should therefore be thoroughly mastered and rigorously followed:

See that no blight is allowed to winter over in the trees. The best time of the year to cut it out is late fall or early winter.

In the dormant season the blighted branch should be cut off about a foot below any visible portion of the disease; in the summer, two or three feet below. If this necessitates cutting off a larger limb, this should be done. It is this rule that is transgressed most often and with the most serious consequences.

After each cut the saw or shears must be disinfected. The disinfectant can best be carried in a milk bottle attached to the belt, and can be applied with a swab. Small corrosive sublimate tablets (four to a pint of water) make an excellent disinfectant. A 5 per cent solution of carbolic acid is also good.

Burn all diseased parts promptly after cutting. In summer this must be done the same day, otherwise insects crawling over them during the night might become carriers of the germs. In winter it is necessary to burn them before the first warm days of spring, but many have neglected this rule to their sorrow.

Inspect every tree carefully after the orchard has been gone over. Even an expert, when cutting out blight, has to do this two or three times to get every case, and a case or two left may ruin the whole campaign by starting the blight in the blossoms the next season.

PRUNING—Orchards in infested districts should be kept free from water sprouts at the foot of the trees, and from suckers and fruit spurs on the main limbs; otherwise the bacteria, entering through these tender parts, will quickly reach the roots or the trunk.

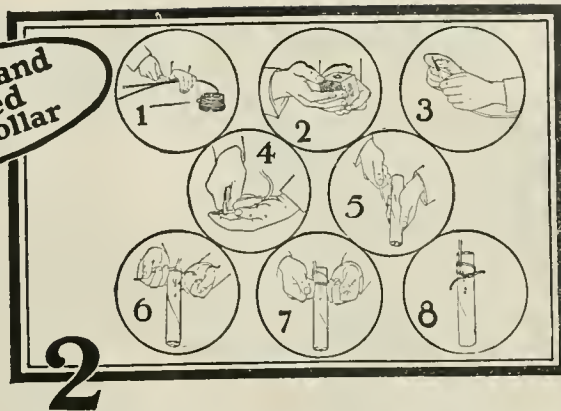
TILLAGE AND IRRIGATION—Anything that favors a rapid, succulent growth of the tree makes it more susceptible to blight. It is, therefore, most important that blighted orchards should have no more tillage and water during the first half of the growing season than are absolutely necessary to the making of the crop. Barnyard manure should be applied only to the more resistant varieties.

Kill the green apple aphid. Observation and experience have convinced us that the winged adult of this insect is the most important carrier of the blight after the bees stop working in the flowers. Thorough spraying with tobacco extract for the green aphid should greatly reduce the spread of blight during the summer.

The claim is sometimes made by those who have grown fruit in the East or the Middle West before coming here that the cutting out of blight is not necessary, that such a practice was very little followed where they came from and yet apples were grown with very little trouble from blight. It is a fact, however, that nearly every apple district, east and west, has a severe outbreak now and then that requires severe cutting.

(Continued on page 18)

—with **PACIFIC STUMPING POWDER**
Save still more by using the latest, cheapest blasting methods—



Preparing and Loading the Charge

SLIT the cartridges (unless the ground is wet) and press each one down firmly in the bottom of the hole dug beneath the stump so as to form a compact mass without air spaces between cartridges. Next, prepare the priming cartridge as follows:

Cut fuse of a length sufficient to project six inches from top of hole. Be sure cut is made squarely across fuse, not diagonally. Remove one blasting cap from box with the fingers. (Do not use a wire, stick, or any other hard implement.) Next slip cap on end of fuse and crimp securely with cap crimper.

Punch a hole diagonally in side of cartridge with pointed handle of cap crimper, and insert cap with fuse attached. To keep cap from slipping out, tie a string around fuse and then around cartridge. Then place cartridge in hole on top of charge. Do not slit it. Cap should point toward bottom of bore hole.

The subsequent steps in stump blasting will be described in future issues of this paper.

Pacific Stumping Powder, the new du Pont Farm Dynamite, is the cheapest explosive for stumping. A 1 1/4 x 8 inch stick will do the work of a 1 3/8 x 8 inch stick of any standard stumping powder—and you get 1/2 more sticks of Pacific Stumping per dollar.

Order from your local dealer and write us for free copy of 125-page book "Development of Logged-off Lands," giving full instructions as to the use of dynamite for land clearing, ditching and tree planting.

E. I. DU PONT DE NEMOURS & CO., Inc.
Spokane Seattle Portland

NON-HEADACHE **DU PONT** NON-FREEZING

PACIFIC

STUMPING POWDER

Dusting of Trees, Vines, Etc. Bleaching, Etc.



ANCHOR BRAND SUBLIMED VELVET FLOWERS OF SULPHUR, also **EAGLE BRAND** and **FLEUR DE SOUFRE**, packed in double sacks, are the **FLUFFIEST** and **PUREST** sulphurs that money can buy.

The fine, light, **SNOWFLAKE-LIKE** particles float to every surface and crevice of the plant.

Do not adulterate these sulphurs with any inert material such as lime or Kaolin, etc. Coating the sulphur particles with an inert material **PREVENTS** the **FUMING ACTION** caused by the sun's rays.

Send for Circulars 6, 8 and 10 about our "Toro" Brand Agricultural Compound and booklet "The Truth About Sublimed Sulphur," also price list.

San Francisco Sulphur Co.

624 California Street

San Francisco, Cal.

Shipment of Green Prunes

By W. H. WICKS

Director Bureau of Plant Industry and Markets, Idaho State Department of Agriculture

AS THE state of Idaho has become the largest shipper of fresh Italian prunes it is of interest briefly to survey the commercial prune industry of the state from this angle.

An orchard survey made by inspectors of the bureau of plant industry, state department of agriculture in 1919, showed 3,962 acres devoted to commercial prune orchards. There is a strong demand for nursery stock and an increased acreage is manifest in our various sections adapted to prune growing which will result in enlarging the production of this delicious fruit. There apparently is no reason why southern Idaho, with its favored climatic conditions, soil, and already established markets and reputation for quality prunes, should not increase this industry to the fullest possibilities.

Experience has shown that prunes can be shipped from Idaho throughout the United States in fresh form with safety, and a number of cars have been marketed in English markets. Records show the number of carloads shipped out of Idaho during 1919 as 1,450 carloads of fresh Italian prunes, with a valuation of \$1,104,900. During 1920 there were 1,500 carloads shipped, bringing a return of \$1,143,000, while in 1921 there were 2,200 carloads shipped out with a valuation of \$1,760,000. For the past three-year period the total number of carloads shipped was 5,150 having a total valuation of \$4,007,900.

The major part of these prunes are grown in the Boise, Emmett, Payette and Weiser valleys and along the Snake river in various valleys in the vicinity of Parma, Caldwell, Nampa, Bliss and the Twin Falls section. The elevation, volcanic ash formation of the soil and climatic conditions all unite in producing the Italian prune to its highest state of perfection, both for shipping fresh to the market or evaporating and selling as dried prunes.

The suit-case pack and the four-basket crate have been standardized for shipping prunes, although there is a tendency on the part of some to use a lug box, while others have shipped in half and bushel baskets. During 1921 there were shipped as shown by the carloads inspected by the state department of agriculture, 1,225 carloads of suit-case pack, 194 cars of four-basket crates, 24 cars in lug boxes, 30 cars of half-bushel baskets and 20 cars of bushel baskets. The three and one-half inch suit-case is the Idaho standard for suit-case pack. One thousand, three hundred eighty-six suit cases per car is the rule, with a minimum weight per suit-case of 17 pounds. The general range is 17 to 22 pounds, mostly averaging 18 pounds net weight and the four-basket crate averaging 20 pounds net.

The standardization of farm products and shipping point inspection as conducted by the state department of agriculture, co-operating with the United States bureau of markets and crop estimates, has developed an inspection and standardization service which is being extensively used by growers, shippers and the trade, and has done much to standardize the quality and marketing of the Idaho prune.

THE markets for fresh prunes have been generally strong and good, with an increasing demand as shippers learn to distribute this fruit over the markets in the middle west and eastern states, instead of putting large shipments on the Chicago and New York markets, which may oftentimes become unable to consume such large quantities. The Idaho prune is marketed by individual growers, several large independent buyers, organizations, and an attempt has been made to market co-operatively. In 1921 cash f. o. b. sales were the rule, with consignment business practically nil.

The evaporator industry in Idaho is well established and is capable of taking care of much of the prune crop in case the market is not satisfactory for fresh prunes. More evaporators, however, could be built to the benefit of the prune industry and the owners operating the same. The output of dried prunes for 1921 was 950,000 pounds.

Of all the tree fruits grown commercially in Idaho, the prune is one of the surest and foremost money-makers in which one can engage. The problems of orchard management, such as soil fertility, irrigation, cultivation, pruning and spraying are being enthusiastically studied by prune growers and much progress is being made in the betterment of the prune orchards at this time. The highest record, which we are able to obtain for the production of Italian prunes in Idaho, is fifteen cars on nine acres. This orchard was seven years old at the time (1915) and located in the Emmett valley. The average production for the state is one car per acre.

The 1921 prices for fresh prunes ranged from \$40 to \$45 per ton. From all indications it seems reasonable to predict a rapid development of the Idaho prune industry and increased prosperity to the state as contributed by this substantial branch of horticulture.

The beautiful blossom scene picture which adorns the front cover this month was taken in the Yakima Valley, famous for the production of its fine apples and other fruits.

▲ ▲ ▲

Kindly mention *Better Fruit* when answering advertisements.

Tree Surgery

By JOSEPH F. TEEVIN

TREE surgery is like medical surgery—the greatest care must be exercised in its operation. All diseased parts must be removed. The smallest piece of mycelium or trace of growing fungi left in the tree will grow.

The heart rot is the worst fungus disease that fruit growers have to contend with. Of the two species, the black and the white, the latter is far the most destructive. The spores, blown by the wind, alight on a wound, but in dry weather will not grow. The ideal weather for its growth is warm weather.

The growth rapidly spreads, vertically sending its mycelium downward more rapidly than upward. As the growth continues it spreads horizontally until, in a badly diseased tree, nothing is left but a shell of sap-wood and bark.

Heart rot has to be cut out of the wood. The best tools for this work are a carpenter's chisel and a farrier's knife. Care must be taken not to cut out any more of the good wood than necessary. Cut a narrow slit in the wood right over the rot with the chisel, following the mycelium up and down until it is all clear. In cutting the rot out there must be care not to disturb the bark, for if it dies around the wound it will take longer to heal over. The farrier's knife is used to smooth up the incision. The open wound is then painted with Bordeaux paste, a mixture of lime and copper sulphate in equal parts.

When wounds are made on a tree by pruning or by accident a good coat of Bordeaux paste applied will save trouble later on. At the time this may seem a waste of time and money, but let the disease get a start and it will take far more time and money to get rid of it.

Land Clearing With Dynamite

COMPILATION of the actual figures in land clearing demonstrations covering all the western counties of Oregon and Washington during recent months has shown that the average acre of logged-off land to be cleared contains not to exceed more than 1,000 to 1,200 diameter inches of stumps to be removed. This represents about 85 to 100 diameter feet of stumps per acre and is equivalent to a maximum of 33 stumps averaging three feet in diameter or 25 stumps averaging four feet in diameter.

Figures on the amount of explosives required for clearing an acre of land are given in a recent report by E. I. duPont de Nemours Company. This states that 250 pounds, representing a total of 650 sticks of the new stumping dynamite, will easily remove either 33 stumps averaging three feet or 25 stumps averaging four feet in

diameter, in such thorough manner that snags and broken parts may be picked up or dragged to a central spot for burning, with practically no additional labor in pulling or cutting roots. Present cost of the stumping powder, or dynamite, is given at 5.38 cents a stick. This would represent an outlay of approximately \$35.

There would be required approximately 35 caps and probably 150 feet of fuse or, instead, perhaps 35 electric blasting caps. These materials, it is said, may be purchased most anywhere at an outlay of \$45 to \$50.

It is pointed out that these figures do not constitute an excessive cost of clearing logged-off lands in producing areas. Such costs serve to illustrate the point that, "even if the price of powder were cut in two, the difference to be saved thereby could in no way justify the withholding of suitable soil from development under present conditions and prices."

Detailed figures on costs of stumping powder are given in the report by way of refuting allegations that they are too high to permit of much general land clearing by this method. The figures seem to indicate that the new powder now in use is sold at almost exactly the same price as the old and less efficient powder cost in pre-war days. The actual difference is said to be only eight cents on 100 sticks.

In the past it has been the practice to use a 20 per cent dynamite or stumping powder, so called, for stump blasting and such powders averaged about 85 sticks to the 50 pound case, or 170 sticks to the 100 pounds.

The average carload price, f. o. b. point of manufacture, of 20 per cent stumping powders in the years 1909-14 was \$9 per 100 pounds and, based on 170 sticks to the 100 pounds, represented a cost of 5.3 cents per stick or \$5.30 per 100 sticks.

There are now manufactured, at least by the duPont Company, powders of an entirely different type, carrying a much greater number of sticks to each 100 pounds and, in carload lots, retailing at \$5.38 per 100 sticks, or 5.38 cents per stick. This cost is very nearly identical with that prevailing before the war.

The newer powders have special advantages, it is said, in being non-freezing, non-headache producing, in blasting stumps more thoroughly than the old types and in working better under all sorts of conditions that may be encountered.

It is shown in the report on land clearing in Washington and Oregon that there is further inducement to such development in the higher prices for farm commodities than were received in 1909-14. It is said that 100 bushels of wheat now purchases 1900 sticks of the new powder whereas the same amount then purchased 1700 sticks of a less efficient stumping explosive.

▲ ▲ ▲

In writing to our advertisers kindly mention *Better Fruit*.



Every Woman Loves to Paint

When She Knows How—Let Us Tell You

Free Advice

PAINTING is really fascinating work. Once you are started you'll probably not want to stop until you have refinished many things you did not intend to do at first.

Of course, there are some simple directions that must be followed if the work is to be successful, and we have a special "Home Service Paint Department" which was organized just to tell you how to paint.

Perhaps some of your furniture, floors, woodwork or walls are beginning to look a little old—just on the surface. Pick out one or two things to do. Tell us about them and how you want them to look when finished.

Our experts will tell you what materials to use, how to do the work step by step, what brushes you'll need, and everything about it.

For 73 years we have been making paints, varnishes, enamels, wall finishes and stains for women to use. They are the finest materials of their kind that we know.

Write for Fuller's Free Advice and refinish a few home things. You'll be surprised how fascinating the work is and how much you can save, too.

Write us now—a postcard—for Fuller's "Home Service" Paint Book, which tells you just what to buy for every kind of painting. Send full description and get our free advice on any kind of painting you want to do.

Decoret Varnish Stains for refinishing furniture and interior woodwork. They stain and varnish in one operation. Match the color of any natural wood. 8 colors.

Silkenwhite Enamel produces a rich, beautiful finish on woodwork and furniture. Flows out smoothly and does not show brush marks. Produces a mirror-smooth surface. Stays white and wears long. Gloss white, semi-gloss white and 8 colors.

Rubber Cement Floor Paint: A durable, sanitary, waterproof paint for floors of kitchens, closets, etc. Spreads easily, covers well. Dries hard over night. 12 colors.

Fullerwear: The all-purpose spar varnish which is unexcelled for all interior and exterior surfaces. Fine for linoleum, floors, woodwork, furniture, front doors and vestibules. Dries hard and glossy. Very durable.

Also makers of House Paint, Barn and Roof Paint, Washable Wall Finish, Tractor Paint, Fifteen-for-Floors Varnish, Auto Enamel, Porch and Step Paint, Fuller's Hot Water Wall Finish (kalsomine), Silo Paint, Milk Can Enamel, PIONEER WHITE LEAD, Implement Paint and Fuller's Oil Stains.



Fuller's SPECIFICATION "Home Service" Paints Varnishes - Enamels - Stains

Manufactured by W. P. Fuller & Co., Dept. M-24, San Francisco

Pioneer Paint Manufacturers for 73 years. Established 1849.
Branches in 19 cities in the West. Dealers Everywhere.

Free Book—Send Coupon

Send coupon for Fuller's "Home Service" Paint Guide, a free book which tells you how to paint and varnish home things, what brushes to use, etc.



Ask our Service Department any question about paint which you would like to have answered—complete detailed advice is given free.

W. P. Fuller & Co.
Dept. M-24, San Francisco.

Please send me without charge a copy of your "Home Service" Paint Guide.

Name.....
Address.....
City.....State.....

BETTER FRUIT

Published Monthly
by

Better Fruit Publishing Company
Twelfth and Jefferson Streets
PORTLAND, OREGON

JERROLD OWEN.....Managing Editor
ERNEST C. POTTS.....Editor
C. I. MOODY.....Advertising Manager

EASTERN REPRESENTATIVES

PAUL W. & GUY P. MINNICK.....
..... 280 Madison Ave., New York City
JNO. D. ROSS.....608 Otis Bldg., Chicago
SAN FRANCISCO REPRESENTATIVE
EDWIN C. WILLIAMS
.....Hobart Bldg., San Francisco

STATE ASSOCIATE EDITORS

OREGON—H. P. Barss, Plant Pathologist, Corvallis; A. L. Lovett, Entomologist, Corvallis.
WASHINGTON—Dr. A. L. Melander, Entomologist; O. M. Morris, Horticulturist, Pullman.
COLORADO—C. P. Gillette, Director and Entomologist; E. B. House, Irrigation Expert, State Agricultural College, Fort Collins.
ARIZONA—F. J. Crider, Horticulturist, Tuscon.
MONTANA—H. Tbornber, Victor.
CALIFORNIA—C. W. Woodworth, Entomologist, Berkeley; W. H. Volck, Entomologist, Watsonville; Leon D. Batchelor, Horticulturist, Riverside.
INDIANA—H. S. Jackson, Pathologist, Lafayette.

All Communications should be addressed and Remittances made payable to

BETTER FRUIT PUBLISHING COMPANY

Subscription Price:

In the United States, \$1.00 per year in advance; three years, \$2; five years, \$3. Canada and Foreign, including postage, \$2.00, payable in American Exchange

Advertising Rates on Application.

VOL. XVI, NO. 12

Back to Prosperity

Slowly and painfully old National Prosperity is creeping back on the job. He is still wan and emaciated, but seems recognizable to the prophets of the country. They are just about a unit in forecasting his near approach and preparing a warm welcome for the long-absent old benefactor.

The fruit sections served by this magazine have reason for optimism. For one thing, they have come through the depression in much better shape than those sections devoted more exclusively to agricultural pursuits. If mushroom projects and shiftless orchardists have been squeezed out of the industry so much the better. The conscientious and capable grower fared well in 1921 and has so much the better foundation on which to build now than the farmer and livestock grower.

Fruit prospects of the Northwest for the present season are uniformly good. Labor costs are down; material prices have declined; transportation rates have

been reduced; foreign markets are strengthening; home markets have cleaned up remarkably well; frost visitations have worked little damage.

In short, the year 1922 has nearly every earmark of prosperity for our fruit growers. It looks like a year when a little extra optimism, coupled with industry, will yield adequate, even generous reward.

Prunes and Printer's Ink

Once in a while the power of advertising makes itself felt in a surprising way. Consider a recent illustration of this.

The Oregon Co-operative Growers' Association was offered an order of extensive proportions for dried prunes for the English trade, provided the prunes were labeled as a California product. The association officers were incensed at the proposal and practically ignored it. There was justification for their feeling of provocation, but that is not the point under discussion here.

In the offer to take Oregon prunes masquerading under a California label there was admission that there is no disparity between the two in quality. The obvious point, however, is that the English do not know this—that they demand dried prunes with a "California" label on them.

The explanation is all summed up in one word—advertising. The value of advertising was learned early and well in California. Astute leaders in the varied branches of that state's fruit industry have long been putting the power of advertising behind their products. There is nothing surprising in the fact that results have made themselves felt 7,000 miles distant, across the Atlantic.

Growers of the Pacific Northwest still lag behind when it comes to advertising their fruit and fruit products. While a majority seem to know that the money spent in judicious exploitation of their high-class products will eventually bring rich returns, others are too short-sighted to see or understand this. Too frequently the penny-wise

views of the near-sighted growers dictate the publicity policies of their organizations.

Continuous education and effort by the well-informed leaders is slowly bringing an awakening—an appreciation of the power of advertising. Meanwhile an occasional object lesson effectively speeds the waking up process.

Fruit and Health

In England, fruit dealers have been advertising the beneficial properties of oranges and pineapples for persons afflicted with the influenza.

This has resulted in no little comment upon the health-giving qualities of all varieties of fresh, ripe fruit. Said one writer: "Every fruiterer's shop window should display some notice drawing attention in some striking manner to fruit as food and medicine."

Not long ago the National Tuberculosis Association met in New York. Entirely upon merit and without solicitation, the association adopted California figs as a part of the diet recommended for under-nourished children. Bread, milk and figs constitute the lunch recommended for such children.

The California Peach and Fig Growers lost no time in giving co-operation and taking advantage of the advertising benefits the action of the tuberculosis association afforded. Fifteen hundred pounds of dried figs were immediately given, free, to the nutrition clinics.

Over in Idaho not a season passes that E. F. Stephens, dean of the state's orchardists, does not give several hundred boxes of apples to various hospitals and the state asylum. Back of this philanthropy is the knowledge that good accrues to the apple industry through this indirect advertising of apples as a health food.

Statements that fruits are Nature's own health foods are as old as the hills, but this fact gives no excuse for not everlastingly repeating the truth and taking fullest advantage of its advertising possibilities.

National Sales Body

A NATIONAL sales agency, the Federated Fruit Growers, to co-operatively market the American fruit crop was created a month ago in Chicago. J. S. Edwards was elected vice-president of the new organization and given managerial authority and instructed to proceed with the formation of a sales department.

The establishment of this agency is the result of the work of the Producers' National Fruit Marketing Committee appointed by the American Farm Bureau Federation to develop an improved marketing system for the fruit growers of America. This committee, consisting of 22 men, has made a complete analysis of the various factors affecting fruit marketing, has studied the work of the various co-operative fruit marketing organizations and as a result has developed a plan for the correlation of these local co-operatives into one national organization.

This temporary board of directors for the Federated Fruit Growers was appointed by the committee:

James Nicol, Michigan, president; J. S. Edwards, California, vice-president and acting general manager; W. B. Armstrong, Washington; Sheridan W. Baker, California; C. E. Durst, Illinois; B. F. Moomaw, Virginia; N. R. Peet, New York; C. E. Stewart, Florida.

J. S. Edwards, the vice-president, selected to act as general manager, represents western fruit growers. He is now president of the Gold Buckle Association, one of the largest growers' associations in California and is a director in the California Fruit Growers' Exchange and in the Fruit Growers' Supply Company.

The new organization will open offices in Chicago at once. National standardization of fruit grades and an advertising campaign to increase consumption of all fruit, will be two of the jobs undertaken by the Federated Fruit Growers.

Shippers' Convention

EVERY important apple growing district of the Pacific Northwest is making plans to entertain at least a portion of the delegates who will come to Seattle, in July, to attend the convention of the International Apple Shippers' Association. The Spokane district, Wenatchee, Yakima and Hood River growers and shippers all have tentative promise that groups of the visitors will pay them a call.

In Seattle a general committee has been busily at work for many weeks arranging for the convention. A. R. Currie is chairman of this committee. It is assured that the visiting shippers will not only be hown a good time, but that many beneficial results will come from their sessions and investigations.

▲ ▲ ▲

Kindly mention *Better Fruit* when answering advertisements.

Do You Want Duty-Free POTASH?

Recently a United States Senator, who is actively engaged in trying to defeat the "joker" in the Free List which puts a 100 per cent duty on agricultural Potash, asked why the farmers were not represented at the hearings before the Senate Finance Committee when the subject was under consideration. A man, who attended these hearings, called the Senator's attention to the fact that three owners of farms had appeared, representing New Jersey, Missouri and Indiana; that the New Jersey Federation of County Boards of Agriculture, and the Representative of the New Jersey State Grange appeared; that the Representative of the National Grange made a statement; that the National Farm Bureau Federation and the Representative of the National Bureau of Farm Organizations had been actively working for free Potash, and that the Washington Representatives of these Agricultural Organizations represented millions of real farmers, who paid good money to belong to these organizations and to support their representation in Washington, upon whom they depended to look after legislation affecting farmers' interests.

Later on it developed that other Senators had this same thought—that the farmers were not asking that Potash remain on the Free List. There can be no question that all farmers most strongly object to paying two dollars for a dollar's worth of Potash.

Ten people, representing farmers, fertilizer manufacturers, producers of imported potash, and former producers of American potash, appeared before the Senate Finance Committee, or filed briefs on the subject.

Of these, nine asked that Potash remain on the Free List and one asked for the duty.

Why then have the Senators come to believe that farmers are indifferent about the matter?

The explanation is to be found in the fact that the "United States Potash Producers' Association" maintains in Washington an organization which is very active in urging a duty on the farmers' Potash. At the hearing their propagandist shouted: "Where was the American farmer yesterday? Where was the farmer of the South, who uses more Potash than any other farmer in the country? . . . Where was the American Farm Bureau Federation, which has its offices in Washington? Where was the National Bureau of Farm Organizations, representing thousands of farmers?"

This was clear bluff, for these organizations were represented and they have taken their stand squarely for Free Potash.

But the bluff, constantly repeated, seems to have made an impression that will be costly to the consumers of Potash, unless immediate steps are taken to show the Senators that farmers are very much in earnest about the matter. The farmers' representatives in Washington must be supported by the farmers at home.

The only effective way to do this is for farmers to write to both of their United States Senators at Washington, urging them to see that the "joker" at the end of Paragraph 1635 be struck out and that Potash used in fertilizers remain on the Free List, where it always has been.

The Senate is now considering the Tariff Bill. Write your Senators today.

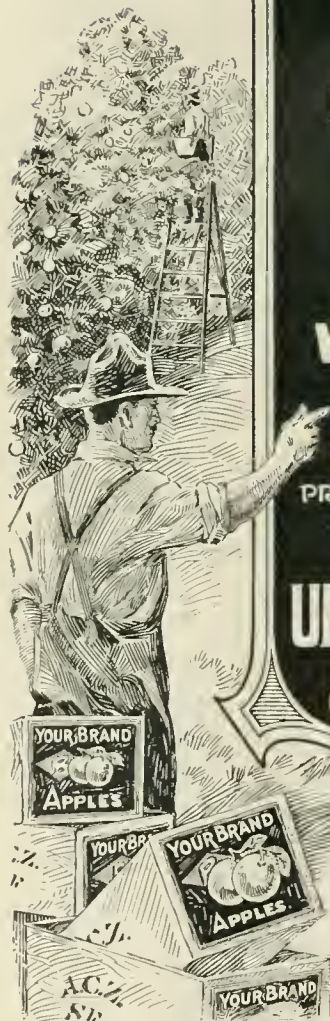
During the time when foreign Potash could not be obtained, Potash sold at more than ten times the prewar or the present prices. Then the American producers, some of whom are called the "Borax Brigade", had the opportunity of profiteering to the limit, and of selling at very high prices Potash of an inferior, and sometimes injurious kind.

Now they ask for "protection" in the form of one of the most excessive duties in the whole Tariff Act.

Unless the farmers act promptly, they are likely to get it.

SOIL & CROP SERVICE, POTASH SYNDICATE

42 Broadway H. A. HUSTON, Manager New York



ATTRACTIVE

**FRUIT CAN
FRUIT BOX**

LABELS

**EVAPORATED FRUIT
DRIED FRUIT**

CARTONS

WINDOW DISPLAYS

POSTERS

WRITE OR TELEGRAPH FOR SAMPLES,
PRICES AND IDEAS.

The
**UNITED STATES PRINTING
& LITHOGRAPH CO.**

COLOR PRINTING HEADQUARTERS

**HOGUE BUILDING
SEATTLE**
**112 MARKET ST.
SAN FRANCISCO**

**Pear and Apple Blight In
Montana**

(Continued from page 13)

RESISTANT VARIETIES—As already indicated, there is a great difference between varieties of apples and pears as to their susceptibility or resistance to this disease. Trees may be resistant in either of two respects or in both. First, if the blight germs get into the blossoms or the tender bark, a natural resistance of the trees may prevent them from getting a start in many cases. Second, if the disease gets a start in the blossoms, the leaves, or the tender shoots, it will in some susceptible varieties spread down into the bark of the larger branches, trunks or even roots; while in other varieties more resistant, it will die out early in the season, forming only a "twig blight." This kind of resistance is the more important.

Nothing is so essential in fighting this disease as to avoid planting certain susceptible varieties, which are almost certain to be killed if attacked, and to pull out or top-work those already growing. It would be impossible and quite useless to list here all known varieties of apples and pears and state the degree of susceptibility of each, for most of them have no commercial value in the state. Our fruit growers, however, may find here listed most of those varieties that have a commercial value in one or more important sections, and they should be guided by it in the setting of new orchards.

Class A.—Relatively resistant, *i. e.*, the blight seldom runs far in limbs more than one-half inch in diameter, and usually makes only a twig blight: Duchess of Oldenburg, Gano, Ben Davis, Rome Beauty, Wagener, Stayman, Winesap, Thompkins King.

Class B.—Moderately resistant, *i. e.*, the disease seldom runs far in limbs more than three-fourths inch in diameter, and usually makes only a twig blight: McIntosh Red, Jonathan, Delaware Red, Grimes Golden, Wealthy, Baldwin, Northwest Greening.

Class C.—Moderately susceptible, *i. e.*, the disease frequently penetrates the smaller limbs (an inch or less in diameter), but seldom the main limbs or the trunk: Yellow Transparent, Fameuse (Snow), Spitzenberg, Delicious, Whitney crab, Martha crab, Hyslop crab.

Class D.—Very susceptible, *i. e.*, many infections may appear in a tree; the blight extends rapidly into the larger limbs and trunks and the tree is usually killed: Alexander, Wolf River, Transcendent crab, McMahon, Winter Banana.

IN CONSIDERING the foregoing lists the grower should understand that classes A, B, and C, rank quite close together and that any of those varieties can probably be grown successfully even in blight-infested districts of the state; while



YOU'LL be surprised at the little cost at which you can make your house look distinctive. The window cut accompanying this ad, is known as the "Queen Anne" design.

For an additional \$15 or \$20 your whole house can have this classy window. Before you finish building send for our catalog. Rovig, 2227 First Avenue South, Seattle "Better Millwork."

In writing to our advertisers kindly mention *Better Fruit*.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

WASHINGTON NURSERY CO.

Toppenish, Washington.
Salesmen everywhere. More wanted.

BOXES

GROWERS—CANNERS

Let Us Figure With You on Your Needs
American Box & Crate Mfg. Co.
PORTLAND, OREGON

between class C and D, there is a very wide difference, the latter being very much more susceptible. It is an exceedingly important fact that in trees belonging to classes A and B, the blight germs nearly always die out in the bark before winter and almost never live over until the next spring, while in those belonging to class C, they frequently live over winter, and in those of Class D they quite regularly do so and thus start a new infection in the orchards at blossoming time. Our orchardists should not attempt longer to grow these five varieties. They are doomed to be replaced by others that are more resistant. It would be most unwise, therefore, for a grower to set them out.

As for the trees of susceptible varieties that have already been planted and have reached the age of bearing, they may be top-worked to varieties more resistant. Trees thus treated, if kept free from water-sprouts will make valuable orchards and will thrive even in the midst of blight, only occasional trees being lost. If, however, the water-sprouts are allowed to grow, they furnish the blight with a quick and easy path to the root of the tree, and the orchard may thus be ruined.

RELATIVE RESISTANCE OF THE PEAR—
Pears have been grown only to a limited extent in Montana, but those trees that have come into bearing have proved so profitable that something should be said for the guidance of those who may be thinking of planting them more extensively.

It is a misconception that pear trees growing in any locality are a special menace to the apple industry. Pears are no more likely to contract blight than apples; and if they have it and the owner desires to fight it he will find it not so difficult to combat in the pear as in the susceptible apple.

The reason for this is that the normal bark of the pear is lighter in color and the blighted portions darker than in the apple; it is therefore easier to find all the blighted limbs. In general, we may say that it is much easier to control the blight in pears than in apples listed in class D.

Pears, like apples, differ in their susceptibility to this disease. The Clapp's Favorite, for example, blights so badly that it can not be grown commercially with profit. The Kieffer, on the other hand, is about as resistant as the apples in class B. Unfortunately, it is not a first-class variety for eating, though it is prized by the canneries. There are three other varieties that have commercial possibilities in this state, the Bartlett, Buerre d'Anjou, and Flemish Beauty. Of these the Bartlett is the most susceptible, though hundreds of thousands of trees are being grown where blight has existed for years. Buerre d'Anjou is decidedly the most resistant, being raised profitably in Colorado, for example, where the blight has greatly injured most other varieties. Both of these are decidedly

superior in quality of fruit to the Flemish Beauty.

All pear orchards grown where blight is found will develop some cases in the tops—many of them if the orchards are neglected.

These may be controlled, however, by the methods outlined here. The principal loss of trees is caused by the blight's running down the limbs into the trunks, or, worse yet, by its reaching the roots through the water-sprouts. To avoid this loss it is important that a pear tree shall have a body and roots of a variety resistant to blight and not likely to sprout. Use for a stock the Chinese sand pear, often called "Japanese" stock, which is much more resistant than the French seedling and does not sucker so badly. Upon this graft the Kieffer or some equally resistant scion. Set deep in the ground so that the roots will be sent out above the union.

In pruning leave four main limbs, and the second or third year after grafting top-work these limbs to the desired variety—for example, Buerre d'Anjou. The buds or grafts should be set one to two feet from the trunk. This will make a fine, large tree; and should the blight run down a limb to the point of union it will there be checked, and a new limb can be grown in the place of the one lost. For convenience one may order from the nursery Kieffer stock on "Japanese" roots and do the top-working himself at the proper time. This system has been thoroughly tried and we recommend it unqualifiedly to those who wish to grow this much-prized fruit.

Pointers on Painting

PAINTS and painting cost less than repairs necessitated by decay or disintegration.

There is no such thing as an all-service paint. Paint should be selected according to the material to be painted and the conditions under which it must give service. The wear on a floor is more severe than on a wall; hence the floor calls for a tougher, more elastic paint.

Painting should not be done when the temperature is lower than 50 F. degrees as the paint will not flow well. It is impractical to paint a hot surface. The old painting axiom is: In spring and fall follow the sun; in summer, follow the shade.

Outside painting should be done in dry weather. Surfaces should not be painted when wet.

Surfaces to be painted should be gotten as smooth and clean as possible. They should be free from grease. If painting new wood, knots and sappy surfaces should be shellaced first. If painting over previously painted surfaces, all blisters and loose or peeled spots should be scraped or burned clean. A brushing with a stiff wire brush followed by sandpaper is good practice.

▲ ▲ ▲

Advertisers appreciate mention of the fact that you read their ad in *Better Fruit*.



SGOBEL & DAY

An International Sales Organization

Established 1869

General Offices

202-204 Franklin Street,
New York, N. Y.

Horace W. Day, President

James S. Stokes, Vice-President

Walter H. Young, Manager

Kenneth H. Day, Sec. Sales Manager

Northwestern Offices

Spalding Bldg.,
Portland, Oregon

C. W. McCullagh, Northwestern Manager
Portland, Oregon

District Representatives

Louis A. Blunck, Weiser, Idaho

Ernest Carpenter, Yakima, Wash.

Stanley Armstrong, Wenatchee, Wash.

J. Arthur Riggs, Hood River, Ore.

Crawford C. Lemmon, Medford, Ore.

Paul McKecher, White Salmon, Wash.

Selling In All Leading Markets

Superior Sales Service



Why Successful Orchardists Come Back to Us for Stock

A fact—by far more fruit trees now in Washington orchards were purchased from us than from any other nursery.

During 19 years, as customers have increased their orchard acreage, steady repeat orders have been proving that we enjoy *public confidence*—the only lasting basis for success in the nursery business.

Because we grow and sell only hardy, matured nursery stock, well-rooted and free from disease—because we won't sell you stock unless we believe it will meet your requirements—because we are here to stay—*our guarantee means something*.

You can depend upon golden-rule treatment in selecting your stock here. Write and let us help you.

Washington Nursery Company

Your Tree Men Since 1903

Toppenish, Wash.

For Control of Aphis— Spray with APHOIL

Which is also an efficient Spreader.

Write for information

Hood River Spray Co.

HOOD RIVER, OREGON
Manufacturers of DORMOIL

In Defense of Scalecide

By B. G. PRATT.

President B. G. Pratt Company, New York

It is a bit unusual to give space to an article defending and praising a specific spray material, but it was an unusual thing for a publication such as BETTER FRUIT to print a story of spray results with brand names all given as we did in the March issue. Discussion was urged and good has come from the interest thus aroused. The picture to which Mr. Pratt refers was not furnished by Professor Parker, but by C. C. Vincent, whose article appeared last month and, according to his report, dealt with tests almost exclusively with Mr. Pratt's miscible oil spray. With regard to the retardation of buds, Professor Vincent admits it may have been partly due to poor condition of the trees as they entered the winter period.

IN THE March issue of BETTER FRUIT, I see a full report of Professor J. R. Parker on leaf roller work in Montana and, as you request a discussion, I am availing myself of the opportunity, not as a criticism, but in the hope that it may be of help to someone.

Naturally, this report is very disappointing to me in that Scalecide should have made such a poor showing, but fortunately, its reputation was not made in a day; neither do I believe it will be lost by one experiment. But the surprising thing to me is that the field experiments with all the oils used, was so poor—the best not killing 75 per cent leaf roller. This is not effective spraying.

The best field work with any oil in Mr. Parker's report is poorer than the poorest work ever reported with Scalecide heretofore during the past ten years. Circular No. 26, Colorado Experiment station, reports 100 per cent leaf roller killed with Scalecide, using 1 to 12, 1 to 15, 1 to 20, and even 1 to 25 parts of water. Cornell bulletin No. 367, reports 96.2 per cent killed in field work where thorough work was attempted, and from 79 to 82 per cent where, admittedly light application was made and under unfavorable weather conditions, and adding "there was no appearance of injury due to the oils."

What was the matter with the Montana tests? I must admit my inability to tell with any degree of certainty, from the data available. I do not believe that any one else has had as long or as wide an experience as I have in handling miscible oils and believe I know what can be expected from them. Any good miscible oil should have given better results.

For seventeen years I have fought

against a coarse spray and for several years past a coarse, *driving* spray, (the spray gun at high pressure). I have 35,000 trees and the spray gun would mean the saving of much time in spraying, but I would lose in efficiency, so I do not use them.

The spray injury as reported to a greater or less extent from all of the oils, I do not attribute to the lateness of the spray, but I believe is entirely due to the spray gun (provided the oils all emulsified properly). The difference in injury from the different oils and on different trees can be accounted for by the different men handling the spray gun, or, the position the same man held the gun on different trees. The closer to the tree, or the wider the opening used, the greater the injury.

In my own orchards, where I use a cluster of fine nozzles, I have on several occasions finished my Scalecide spray only two or three days before we started the pink or cluster bud spray without the least injury. I do know, however, of severe injury to buds earlier than this with a coarse, driving spray. You can drive an oil spray into the folds of the expanding buds where it would be impossible to drive lime-sulfur. But why drive? You cannot do effective spraying by splashing the material on the trees, no matter how hard you splash it. A mist will cover completely, give better results and no injury.

The photograph on page six, showing the retarding of the buds by the use of miscible oils, is misleading and due, we believe, to the driving spray. The June, 1918, issue of the *South African Fruit Grower* had a picture showing the opposite condition on trees sprayed for five years with Scalecide.

We agree with you fully that "experiments with spray materials, when scientifically carried out by experts, are certain to add something to the sum total of existing knowledge about them." But they are often too sporadic and not continued long enough to eliminate the natural margin of errors.

I am glad to report that the experiment in Montana is to be repeated this year, and I sincerely hope that better results will be obtained with all the oils used.

I assure you that I will be pleased to know that an oil or oils are made on the Pacific Coast that will control leaf roller as well as Scalecide has always done before and will, in all probability do again, for it hurts me to pay such a tremendous tax to the railroad. When the time comes that Scalecide will be indispensable to the Northwest fruit grower, we hope conditions will arise that will greatly reduce or eliminate this extra tax.

▲ ▲ ▲

Advertisers appreciate mention of the fact that you read their ad in *Better Fruit*.

Care of Raspberries and Evergreens

(Continued from page 7)

ground, and carry the new canes overhead, up between the bearing canes during June, July and August. In February, they are dropped to the lower trellis. That is the plan that is being used very commonly with some of our better plantings in the Puyallup valley.

The canes overhead mature the wood better, are hardier when carried up than on the trellis underneath, and go through the winter better. In 1919, in adjoining fields, where the canes were carried overhead there was practically no winter injury. The disadvantage is that it is a little hard to get them up during July and August. It is easier to drop them than it is to carry the new canes up to the bearing trellis.

WHERE we use a commercial fertilizer we like to have about a 2-10 or a 2-8 or a 2-4 combination. On our sandier soils we believe in a great deal of phosphorous. Where we might ordinarily use a 2-8 fertilizer, we like to use a little more phosphorous because we find that the plants respond on that lighter soil where considerable phosphorous is used.

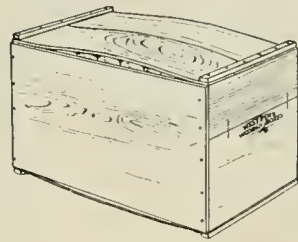
One common practice that our growers are using now is the combination of poultry and berries. Almost every berry grower, 75 or 80 per cent, now have some poultry in connection with their berry plantation. At certain times of the year they let the poultry run in the berries. The poultry helps cultivate the hills, keep down weeds and grass between the plants, and also aids in fertilization. One man a few years ago said: "If my poultry did not lay an egg they would pay for themselves in the benefit they do to the field, in fertilizing and scratching. I consider that the eggs they lay are clear velvet." So we are using fertilizers now that have hen manure as the chief element and supplement that with phosphorous and potash.

After planting Evergreens we get a paying crop in about three years. We will get a light crop the second year, a little heavier the next year. The second year we would get about 25 crates, the third 100. A crate weighs about 20 pounds—18 of berries. The fourth year they give us a little heavier crop, the fifth year we can expect five to seven tons to the acre.

New officers of the Skookum Packers' Association are: I. H. Logue, president; C. W. White, first vice-president; A. E. Munson, second vice-president; Miss Grace Lamphere secretary-treasurer; J. A. Warman, general manager.

▲ ▲ ▲

Large numbers of Delicious apple trees have been planted in the Yakima district this spring.



Westpine boxes are MORE than mere containers

WESTPINE boxes are more than merely containers for your crop—they are protection and insurance.

Strong and sturdy Westpine boxes save your fruit—your profits—from losses in storage, rough handling and the weaving motion of shipping.

In Westpine boxes your apples reach the market in perfect condition. They find ready sale.

Be sure you use Westpine boxes this year. They are made from thoroughly seasoned and inspected western white pine. They afford your apples needed protection.

Write today for "The How and Why of Good Wood Boxes," a handbook on the proper construction and nailing of wood boxes. It gives results of U. S. government tests on apple boxes.

Box Bureau, Western Pine Manufacturers' Association
510 Yeon Building, Portland, Oregon

WESTPINE WOODEN BOXES



Get More Money For Your Fruit

You can average higher prices for your fruits by selling them at public sale than in any other way. And the selling cost will be lower. In addition, you get your money within twenty-four hours after sale. Write for free copy of booklet, "More Dollars for Fruit Growers."

The Fruit Auction Co.
Established 1896
202-208 Franklin St., New York, N. Y.

Codling Moth

This destructive pest requires utmost vigilance. Use ORTHO DRY ARSENATE OF LEAD. Uniform in strength. Mixes perfectly, and stays in suspension a long time.

Write for Ortho Circular

CALIFORNIA SPRAY-CHEMICAL COMPANY
WATSONVILLE, CALIF.

Address Dept. F.





The Casein Spreader

*Makes your spray spread
and stay*

giving full protection to
bark, foliage and fruit.

Use Kayso with all sprays.

Ask your dealer — or
write today for circular.

**CALIFORNIA CENTRAL
CREAMERIES**

425 Battery Street, San Francisco
LOS ANGELES CHICAGO NEW YORK



Safe—Economical—Convenient

Are there CURLED LEAVES on Your Apple Trees



Then get busy. That's a sure sign of Aphis. These little insects are sucking the life out of your trees. Kill them unless you want a small crop of dwarfed, specked fruit. You also run the risk of Aphis killing your trees.

Spray at once with

Black Leaf 40 Kills Aphis
40% Nicotine

Recommended by agricultural colleges and experiment stations. Don't make the very common mistake of thinking that Lime-Sulphur, Arsenate of Lead or Bordeaux kills Aphis. They don't, but if you are using those sprays, simply add Black Leaf 40 properly diluted, and make one spraying do double duty. Aphis also attacks Peach, Plum, Cherry as well as many vegetables and plants. Black Leaf 40 is highly concentrated so that only a small amount is required. The cost is small—only a few cents per tree. Free Spray Chart. Your dealer has Black Leaf 40 and one of our free spray charts. If he is out, write us direct.

**Tobacco By-Products &
Chemical Corporation**

Incorporated

LOUISVILLE, KY.

Pollination of Filbert Varieties

(Continued from page 11)

abnormal year rather than just enough for the normal year.

The Daviana works best on Du Chilly and less on the Barcelona and the White Aveline does the reverse. Clackamas is excellent for Du Chilly, but not for Barcelona. Alpha is excellent on Du Chilly. Nottingham and Cosford are both excellent on Barcelona, but lighter on Du Chilly. These two latter varieties gave the best results on Barcelona, but are very scarce.

For some time to come it will be necessary to plant the varieties at hand even if later experiments show that these odd varieties being tested are sufficiently good to warrant propagation. Even with the varieties at hand it will be difficult to furnish the proper number of pollenizers and may be necessary to limit the number to the minimum.

With the development of the filbert industry came the usual confusion and as a result there is considerable uncertainty as to the names of varieties being distributed. For that reason it would seem advisable for the prospective grower to purchase all his nursery stock from one man and use the combination of varieties that is giving the seller good results in pollination.

Experimental work has not been carried on far enough to establish for a certainty the best pollenizers for any one variety. Future work may upset some of the data at hand, but one thing seems to be certain, filbert varieties are self-sterile.

In writing to our advertisers kindly mention *Better Fruit*.

Chicago, Ill.,

May 19, 1922

MR. JERROLD OWEN,
Managing Editor, BETTER FRUIT,
Portland, Oregon

MY DEAR MR. OWEN: I have just finished a very careful reading of the May issue of your worthy publication. While it is not the largest or best illustrated of the many good issues you have put out, I must say that I believe it is far and away the best and most constructive copy of BETTER FRUIT which I have ever seen. It is intensely practical and should be of greatest possible value to the men who read its admonition and act upon its suggestion and instruction.

Sincerely yours,

E. E. CRITCHFIELD

Wild Birds as Pest Destroyers

By J. HOWARD WRIGHT,
Yakima, Washington

FEW PEOPLE consider the value that bird life has to the orchardist and farmer. Only in recent years have state legislatures and congress realized this and begun making laws for the protection of birds. Campaigns have been put on in our public schools to interest the child in birds. Where once the small boy was accustomed to hunt them with his air-rifle, he is now constructing bird-houses for their comfort.

Our wild life is fast to disappear unless stronger measures be taken for its protection. Many sportsmen seem to think all game was created for their pleasure in shooting it.

One of the most common of our birds is the robin. It is distinctly a companion of man, and wherever his hand has cleared the wilderness the robin has followed. He should be given all the protection possible, on account of his economic value as a destroyer of injurious insects, in spite of his fondness for small fruits at times. The food of the robin consists mostly of insects and their larva. The insects eaten include grasshoppers, bugs, beetles, weevils, and such larva as wireworms and cutworms.

The cheery call of the bob-white was one of the first distinctive sounds that many of us knew and loved as children. Perhaps there is no bird to which the American people are more deeply indebted for material benefit. He is a bird of the home, the farm, garden and field; the friend and companion of mankind; a much needed helper and destroyer of insect pests and weeds. He feeds entirely on the ground, except when driven by deep snows to seek berries and seeds from the shrubbery.

Through investigation by the Department of Agriculture it is found that the bob-white ranks very high as a destroyer of many of the most destructive insect pests. Among those eaten are the potato beetles, cucumber beetles, wireworms, weevils, grasshoppers, chinch-bugs, squash-bugs and caterpillars. As a destroyer of weeds the bob-white stands pre-eminent.

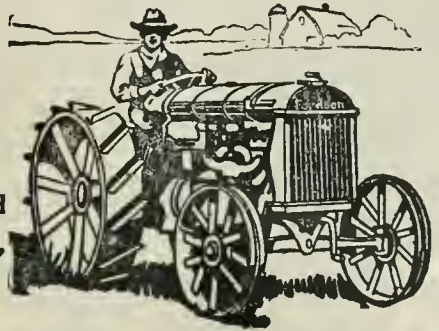
Every one knows the meadow lark. The food of the lark is gathered from the ground. Three-fourths of it, taking the whole year together, consists of insects, and the other one-fourth of weed seeds and grain. The grain is waste taken from the field during the winter months. Examination of a large collection of stomachs, and other sources of evidence show the range of insects caught and eaten by this bird. Among the insects found were ground beetles, the justly hated white-grub, weevils caterpillars, cutworms, wireworms, chinch-bugs, grasshoppers and crickets.

Another one of our common birds is the woodpecker. With the possible exception

DO ALL YOUR WORK

WITH THE FORDSON

Plow, Harrow, Thresh, Grind
Feed, Fill the Silo, Pump Water,
Pull Stumps, Cut Wood, etc.



FORDSON REDUCED TRACTORS \$230

NOW \$395 F.O.B. DETROIT

The new price makes the Fordson more attractive than ever, sign the coupon and arrange for a FREE demonstration.

NORTHWEST FORD DEALERS

Dept. B, 700 Fairview Ave., Seattle

Dept. B, East 11th and Division Sts., Portland

Please send me free information on Fordson Tractors. (Mark X in square opposite literature or service desired.)

Fordson Tractor Manual.

The Fordson at Work.

Free Demonstration. (State purpose for which tractor is intended.)

If you own a tractor, state what make

Name

Address

GRASSELLI

May is *Arsenate of Lead* month. Get your order in now. (The supply may be limited.)

GRASSELLI

Arsenate of Lead, Calcium Arsenate, Lime Sulphur Solution, Bordeaux Mixture.

GRASSELLI GRADE Arsenate of Lead means—

1. It is actual GRASSELLI grade—the same famous quality that has made GRASSELLI the foremost name in the chemical world.

2. It has the certified purity, strength and uniformity of all Spray Products bearing the GrasseLLI Label and Guarantee.

3. It is backed by GrasseLLI's 83 years of leadership in the chemical field—our carefully guarded reputation is your protection and warranty.

Ask for GRASSELLI Insecticides and Fungicides and INSURE RESULTS in spraying.

Established 1839

THE GRASSELLI CHEMICAL CO., CLEVELAND



How long should a shingle roof last?

Answer that by another question—
How much service in a tractor? Depends largely on the care you take of it. Same for a shingle roof.

Unless you fill the pores of the wood with a weather-resisting preservative, natural oils will evaporate, rain will soak in, then shingles will warp and crack under the hot sun and withering winds.

ORONITE SHINGLE OIL made by Standard Oil Company (California), is easy to apply, and will save your shingle roofs or shingled side-walls many a repair job. A tight, well-laid roof treated with it should last a lifetime.

Our agent near you will tell you the success others have had with ORONITE SHINGLE OIL in securing longer roof life. Ask him, too, for color-mixing formulas.

STANDARD OIL COMPANY
(California)



ORONITE SHINGLE OIL

of the crow no bird has been subject to so much criticism as he. When he is seen scrambling over fruit trees and his hole is found in the bark it is concluded that he is doing harm. The woodpecker obtains a large part of his food from the trees. Most birds must get their insect food from the air or the surface of the bark, but the woodpecker is able to get many larva and grubs beneath the bark. He is able to locate his hidden prey with great accuracy and often cuts small holes directly to the burrows of the grubs. He rarely disfigures a tree that is healthy, but when he finds a tree infested with wood-boring larvae, he locates the insects accurately, draws them out and devours them.

Among the smaller woodpeckers are the hairy and downy. Both of these are birds from which the orchardist and forester have nothing to fear and much to gain. The number of useful insects which they eat is insignificant, while the number of destructive larva they destroy must have a very great effect in reducing the number of pests. More than three-fourths of the food of these birds consists of animal matter and less than one-fourth is fruit and this mostly wild. This ratio is maintained very closely the year around.

THE most persecuted of all our birds are the hawks and owls. Because a few of them are destructive, all are considered such. All may be divided into three classes. Those most beneficial, include the marsh hawk, red-tailed hawk, red-shouldered hawk, and sparrow hawk. Those in which the harmful and beneficial qualities balance are the golden eagle, bald eagle, pigeon hawk, prairie falcon and great horned owl. Those of the harmful class, include the duck hawk, sharp-shinned hawk and Cooper's hawk.

The food of the marsh hawk is quite largely small quadrupeds, although in some localities it may include birds. An average pair, in rearing their young, would destroy in the neighborhood of 1000 mice during the nesting period. How much would an orchardist give if he knew so large a number of mice were to be destroyed in his orchard?

A campaign of education teaching the difference between the good and bad birds of the hawk family is having its effects, and agriculturists are realizing that but few birds of prey are more harmful than beneficial. It is the opinion of many that there are only three hawks deserving to be destroyed—the sharp-shinned, Cooper's and Gos hawk. There are a few others that acquire a taste for poultry and it may be necessary to eliminate a particular individual occasionally, but the wholesale destruction of hawks brings punishment by an increase of quadruped and insect pests.

Among the owls the common screech owl is probably best known. A considerable number of them make their homes in the orchards, and the man who is so for-

Musical
Merchandise

Write
Us

WE SAVE YOU MONEY!

W. Martius Music House, Inc.

1009 First Avenue, Seattle, Washington
Everything Known in Music

SHEET
MUSIC

Write
Us

tunate as to have screech owls attach themselves to his orchard should consider himself especially favored, for the good they will do in keeping mice down is beyond calculation. Now that mice are becoming such a menace to many orchards, certainly everything possible should be done to preserve these owls. They are with us the year around.

Another thing about the owl and one that is particularly valuable, is that it hunts for food at night when most other birds are at rest. It thus follows up the day-work of the rodent-eating hawks, providing a continuous check on the four-footed vermin of the ground.

Practically all birds have some value to us. There are many more that have not been mentioned in this article. Some that must not be overlooked are members of the finch family. There are largely seed eaters, destroying immense quantities of weed and grass seeds. Blackbirds also live on insects and seeds. There are the little chickadees, and nuthatches, who spend the winter in large flocks, always busy hunting on the bark of the trees the small insects the woodpeckers overlooked.

The fly catchers, including the phoebe birds, and king-birds are capturing their food supplies from the air throughout the summer. Last but not least in value are the warblers, constituting a very large family. The food of these birds is very small insects, such as plant lice, including aphids and scale, which are such a nuisance to the fruit and vegetable grower.

Benefits from Organic Fertilizers

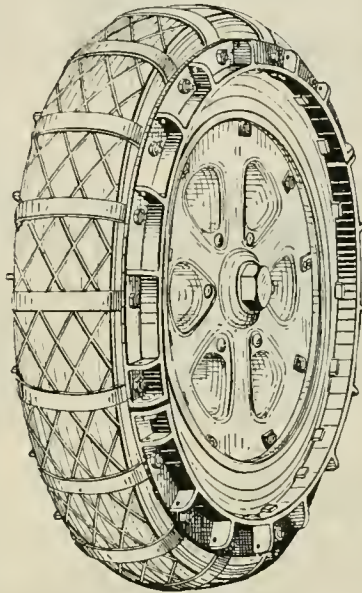
(Continued from page 8)

seventy per cent. This discovery refutes the idea that nitrogen alone is responsible for the increase of the leaf growth.

To quote from Mr. Long's article in the *Saturday Evening Post*: "This better leaf production in the early growth stage is especially important, because the leaf's ability to absorb carbonic acid gas depends upon its size. Therefrom follows the fact—proved when Riedel interrupted the gas supply—that the young gassed plant with its abnormally large leaves extracts an extra dole of carbon also from out of the ordinary air, so that carbon fertilization, even if carried on for only a few days, in the early growth period, largely increases the ultimate size and weight of the crop."

The second great result from Riedel's experiments was that even by gassing for only a few weeks, crop yields of all kinds, fruits, grains and roots, were immensely increased in quantity, size and quality. The increases ranged from 36 per cent to 200 per cent. Whereupon, Riedel declares that carbon fertilization without other fertilizer promotes plant growth more effectively than all ordinary fertilizers, when these are used without artificially supplied carbon dioxide. By ordinary fertil-

Truck Traction



Ever Get Stuck

in the orchard with your truck? Ever start for the warehouse with half the load your truck could pull because you were afraid of that one wet place in the road?

Of course you have, but you need do so no more!

Foley Traction-Rims
cure traction troubles—save tires

Write for description and prices to

Foley Traction-Rim Company

109-111 Tenth Street
Minneapolis Minnesota

Dealers Write for Territory

LADDERS

Write us for prices and specifications on Orchard or any other style of ladders.

Nelson's Ladder Wks.

267 Second Street Portland, Ore.



Pedigreed Silver and Cross FOXES for sale. Prices Reasonable. Write for information.
William D. Rambo
407 Sprague Ave.
Spokane Wash.

SERVICE
IS OUR FIRST N-AIM



THE SIMPSON & DOELLER CO.

1423-24 N.W. BANK BLDG.
PORTLAND, OREGON.

GET OUR SAMPLES AND PRICES

WE CAN FILL YOUR ORDER FOR STOCK APPLE, PEAR, CHERRY AND STRAWBERRY LABELS IN 24 HOURS.

A deadly spray

—and it costs only two cents a gallon to spray with Hall's Nicotine Sulphate.

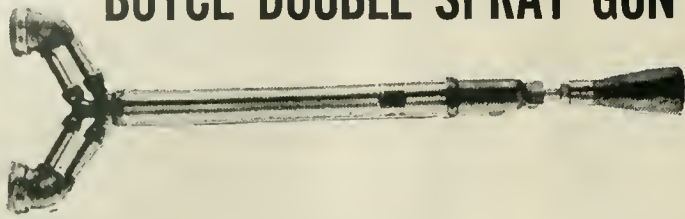


HALL'S

NICOTINE INSECTICIDES

HALL TOBACCO CHEMICAL CO.
3919 Park Ave., St. Louis, Mo

BOYCE DOUBLE SPRAY GUN



The Only Double Nozzle Gun Possessing Both Long and Short Range. Thoroughly tested and approved in twelve different states, by leading fruit growers

Adapted to use on any spray rig. Capacity 7 gallons per minute.

Requires less power than two single guns.

One nozzle can be used as single gun for small trees

Save's one man's labor

Economy of material; rapidity of application—"I can do the work of two men," said by many users. A better mist, better covering—which means less mildew, fewer worms, more "Extra Fancys"

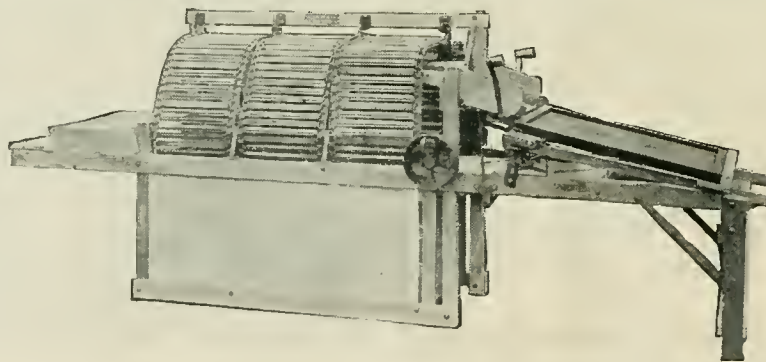
TRY IT. YOU WILL LIKE IT.

Price \$15.00. Sent on receipt of P. O. order

M. L. DEAN, Western Distributor

Telephone 931 Blue 631 Douglas Street Wenatchee, Wash.

OUR POWER PRUNE TRAYERS ARE BEST BY TEST



This prune dipper and trayer is our three tank machine for hot and cold water. We also make a single tank machine for one dip in cold water. These power trayers have large capacity quality work, built strong, largest machine only twelve feet long, requires any light power to operate, and will not crush the softest fruit. Buy the old reliable, tested many seasons. Prices right.

SALEM MFG. CO.

SALEM, OREGON

FACTORY LOCATED 136 N. FRONT and HOOD ST.

PLANTING

Salem Nursery Co.

FRUIT, NUT AND
ORNAMENTAL
TREES

WILL BRING YOU
SATISFACTION
NOW IS THE TIME
TO ORDER

Write

Salem Nursery Co.

428 Oregon Bldg. SALEM, OREGON

Additional Salesmen Wanted



Northwest
Orchard
Ladders

"The Quality Line"

For Sale by

Leading Dealers Everywhere

Manufactured By

Northwest Fence and
Wire Works
PORTLAND, OREGON

izers, he evidently has reference to the purely chemical, or inorganic, since animal fertilizers do immensely stimulate the production of carbon dioxide.

The conclusions arrived at by Riedel seem to point to the use of organic fertilizers and aerated soil as the most practical methods now available to the farmer for increasing the amount of carbon dioxide for his crops, since it is not as yet commercially practicable for every farmer to obtain carbon dioxide on a large scale for artificially fertilizing his crops.

One of the organic fertilizers used with marked success for a number of years in the states of Washington and Oregon, is a manufactured orchard dressing having an analysis of 6-10-14. Letters from prominent orchardists in the two states tell of success in the use of this fertilizer. They speak of obtaining maximum quality and quantity crop returns over a period of years. They seldom experience "skip" crops.

Fruit inspectors recently discovered root nematode while examining fruit trees at Cottage Grove, Ore.

Your magazine is excellent. Keep up the good work.—Ross T. Mayer, Washington.

OREGON

AT THE annual meeting of the Oregon Growers' Co-operative Association in Salem, general manager Robert C. Paulus reported that business transacted for the year 1921 very closely approximated \$2,000,000. Of dried prunes 7,250,000 pounds were handled. Over 200 cars of apples were shipped, averaging about \$1000 to the car. Officers elected by the board of 21 directors were: Kenneth Miller, Sheridan, president; P. S. Woodin, Grants Pass, first vice-president; Allan Bellinger, Scotts Mills, second vice-president. The executive committee is comprised of Messrs. Miller, Bellinger, G. E. Sanders, W. B. Biddle and R. W. Hinkley.

▲ ▲ ▲

CHECKS covering the fourth distribution since Christmas were recently mailed by the Apple Growers' Association at Hood River to its members. These included final returns on the 321,041 boxes of Spitzenberg apples handled during the season. The net average on these was \$1.61 a box.

▲ ▲ ▲

THE Oregon Growers' Co-operative Association is seeking a reduction in transcontinental rates on late pears. At present all pears are classed as perishable and take a rate of \$2.08½ per hundred pounds. The association's contention is that late pears are no more perishable than apples and are entitled to the apple rate of \$1.50.

▲ ▲ ▲

IT WAS recently announced that the John A. Eck company of Sutherlin had contracted for 50 carloads of green prunes to be shipped to its plant in that town. The firm expects to handle 65,000 boxes of green prunes from orchards about Sutherlin. The contract price was said to be two cents a pound, or one-half cent more than paid last season.

▲ ▲ ▲

THE Salem Independent Broccoli Association recently held its annual meeting and election, selecting these officers: C. C. Russell, president; J. W. Savage, vice-president; Mrs. U. J. Lehman, secretary; Frank Hines, Fred Limbeck and M. C. Pettys, board of directors, together with Messrs. Russell and Savage. It was reported that Glafke

& Company, handling the association's crop, had taken 2000 crates. Nearly every grower will have an increased acreage this year. It was voted to obtain seed from England.

FINAL returns on Hood River's apple crop of 1921, as published by the bureau of crop estimates, Department of Agriculture, show the total to have been 2,600,000 boxes, or considerably above all early government estimates. Expert orchardists of the district predict another big crop for this season.

M. J. NEWHOUSE, general manager of the Washington Growers' Packing Corporation, on June 1 becomes assistant general manager of the Oregon Growers' Co-operative Association, succeeding C. I. Lewis. Mr. Newhouse is a graduate of Washington State College. He served for a time as county agent in Clarke county and then entered the packing corporation, which he helped organize.

PLANS have been under discussion for construction of a cannery at Canby and it is believed the project will be put through in time to handle some fruits this season.

ALTHOUGH the day was cold and uninviting it was estimated that 15,000 persons visited Salem on its annual blossom day, May 9. Hundreds of motorists from outside points viewed the orchards and enjoyed the exercises.

L. S. AINSWORTH, who had been engaged in the apple shipping business at Hood River for two years, recently moved to Portland to engage in business.

BLOSSOM DAY was observed at Hood River on May 21, after being set back one week because of a late spring. The committee in charge was composed of F. A. Cram, chairman, Dr. J. W. Sifton, Nelson Emory, E. E. Brett, C. A. Reid, K. W. Sinclair, Dr. L. L. Murphy, P. F. Clark, O. C. Hughes and Al Cruikshank.

THE Brookhurst Orchard Company has been incorporated in Portland with a capital of \$75,000. The incorporators are Sam Morrow, Catherine Morrow and O. B. Morrow.

WORK has been started at Salem on the new cannery of the Starr Fruit Company. The plant is to cost \$75,000 and is expected to be ready to operate this season. It will have a capacity exceeding 250,000 cases of fruit.

F. C. FABER, formerly a merchant at Central Point, has purchased 20 acres of uncleared land at Willow Springs and has been having it cleared preparatory to setting out prunes and grapes.

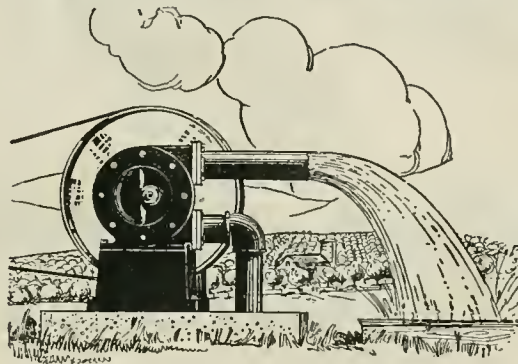
THE small prune orchard of H. C. Schultz at Dallas, 8½ acres in extent, was recently sold to A. A. Lapp for \$700 an acre. The tract, which is at the edge of the city, has no buildings on it.

WASHINGTON

AT THE annual meeting of the Wenatchee Valley Traffic Association these trustees were elected: H. S. Crowl, C. T. Haskell, J. M. Wade, S. H. Andrews, D. L. Oliver and J. H. Auvil. Because the association has become self-supporting it was proposed to suspend the usual assessment of a quarter-cent per box. It was voted, however, to continue the assessment and extend activities of the organization.

SUIT for \$100,000 has been filed at Wenatchee by W. F. Gwin against the Northwestern Fruit Exchange, J. S. Crutchfield, J. A. Meade and H. G. Fletcher. The complaint alleges se-

VIKING PUMPS



Keep Power Bills Down

Wherever water to be lifted stands within suction limit of the pump, the Viking will deliver it to any desired point more economically than any pump we know of.

The Viking converts over 60 per cent of the power applied into useful work. Some pumps use only 30 per cent; some use 40 per cent, but the Viking utilizes over 60 per cent on all average installations; in other words, it wastes less power.

The high efficiency of the Viking is due to the *Rotary Principle of Design*—every revolution of the Viking draws in a definite quantity of water, passes it through the pump and forces it out the discharge—no churning of water in pump casing—no unnecessary waste of power.

The Viking is a simple, slow speed pump, easy to install. No foot valve or priming pump required on low lifts. Built in the following sizes: 10, 20, 35, 90, 300, 450, 1050, gallons a minute.

Our Engineering Department will gladly recommend the correct size and type of pump to meet your requirements—no charge for this service.
Viking Pump Catalog Mailed Upon Request

De Laval Pacific Co.
SAN FRANCISCO

**LABLES
CARTONS
LITHOGRAPHED
DISPLAYS**

F.C. Stettler Mfg. Co.
Portland, Oregon

**MYERS
HONOR-BILT
DOOR HANGERS**

"MYERS MEANS MERIT"
CAN'T get off the track. They stay on—always. This, with patent adjustable feature make Myers Door Hangers absolutely superior. Roller bearings permit easy "push and pull." Twelve styles to fit every need. Myers dealers everywhere handle Myers Door Hangers and the world-famous line of Myers Pumps and Hay Tools. Be sure it's a Myers. See your dealer. Let him point out the Myers improvements. Or write us for catalog.
THE F. E. MYERS & BRO. CO.
135 Church St., Ashland, Ohio

PUMPS FOR EVERY PURPOSE
HAY TOOLS & DOOR HANGERS

Pacific Northwest Distributors



Spokane, Washington Portland, Oregon
Buy From the Local Mitchell Dealer



Every atom of "Red Crown" mixes with air FOR POWER

"The gasoline of quality" is 100% POWER. It is refined to vaporize thoroughly. Every atom of it mixes in the carburetor with from 12 to 16 times its volume of air for POWER. With "Red Crown" you get ready starting—rapid acceleration—greater mileage—a continuous stream of power.

Run your car on "Red Crown" and *nothing else*, and you won't have to bother with carburetor adjustments. It is uniform in quality wherever and whenever you buy it.

Fill at the Red Crown sign—at Service Stations and garages and at other dealers.

STANDARD OIL COMPANY
(California)



rious injury to Gwin's reputation and business standing through publication of the recent suit of the defendants against the Skookum Packers' Association, Gwin and others.

WASHINGTON cranberry growers and various business interests have launched a campaign to increase the cranberry industry of Pacific county to an output of \$1,000,000 annually, or ten times the present production. Problems of disease control are being taken up under direction of Dr. F. D. Heald, pathologist of Washington State College, and J. R. Beck, county agent.

W. H. PRIDE & COMPANY of Bellingham, under a new policy adopted by the directors will dispose of some of the firm's farms and devote its time to the canning business. The tracts are to be sold with the stipulation that berries therefrom are to go to the firm for a period of ten years.

LOMBARD & HORSLEY are planting 20 acres to Rome Beauty apples on a tract between Zillah and Toppenish. They are spacing the trees 30 feet each way and are using no fillers. The firm now has 500 acres of orchard, having recently added plantings of 20 acres of Moorpack and Blenheim apricots and 40 acres of Elberta peaches.

AN OPTION has been taken on a site for the new warehouse at Meyers Falls proposed by the Fruit Growers' Warehouse company. The warehouse organization, now being incorporated, announces that stockholders who may not wish to pool their fruit may sell independently.

GOOD CROPS of strawberries are going out of the Underwood and White Salmon districts. The growers at Underwood are enabled to handle their crop better than heretofore, through use of the new cold storage plant they constructed at a cost of \$10,000.

AT THE annual meeting and banquet of the Fruit Growers' Association at Ticon the following officers were elected: J. W. Tapp, president; J. C. Havner, vice-president; F. J. Straka, secretary treasurer.

THE Edmonds Growers, Association elected officers for the year as follows: L. E. Keeton, president; George Addy, vice-president; J. J. Robinson, secretary; A. B. Lewis, treasurer.

THE Associated Growers' Exchange has taken over the business of Pennington & Co., at Yakima. Mark W. Pennington remains as general sales manager.

TWO of the 12 fruit warehouses of the defunct Spokane Fruit Growers' Company have been sold to private interests, according to Receiver J. A. MacMillan. The Otis Orchards building has been purchased by William Kroll and that at Meadow Lake by the Washington Grain & Milling Company, for use as a grain warehouse.

TOTAL fruit shipments of the past season from Wapato aggregated 983 cars. Potato shipments had amounted to 628 cars at the end of April, with about 450 cars still on hand.

EMPLOYEES of the Everett, Bellingham and Mount Vernon branches of the Pacific Fruit & produce Company enjoyed a reception and banquet recently, there being 40 persons present. R. B. McLaughlin, district manager, acted as toastmaster and the affair was in general charge of G. S. Grandberg, manager at Bellingham.

THE North Pacific Co-operative Berry Growers' Association is reported to have placed orders for \$25,000 worth of boxes with the Bremer Manufacturing Company at Puyallup.

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.
Catalog mailed on request

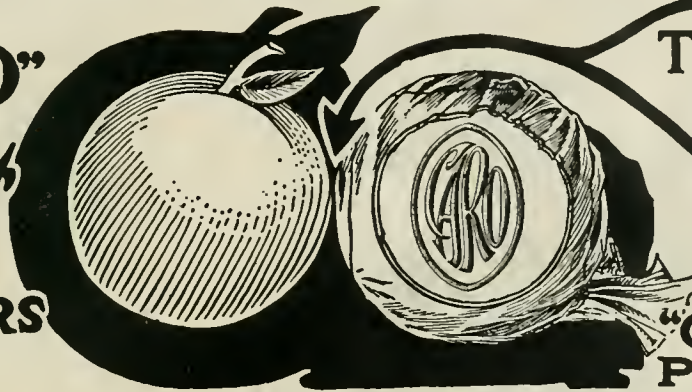
FREE An 8x10 Enlargement

With \$3.00 Worth of
Kodak Finishing. Quick Service
Films received forenoon mailed out same
day. We pay return postage.

All Work Guaranteed
WOODARD, CLARKE & CO.
Alder at West Park PORTLAND, ORE.

Follow the Violet Lines. There is Merit in the Wrapper.

"CARO"
fruit
WRAPPERS



This
is the
POINT

"CARO"
PROTECTS

"Caro" Protects—"Caro" Prolongs the Life of Fruit—Why?

CHEMICALLY TREATED WITH BORDEAUX MIXTURE

FRUIT MATURITY is retarded by cold or refrigeration and hastened by heat or atmospheric exposure. The soft fibrous silk-like texture of "Caro" provides just sufficient ventilation to retard the ripening process. FRUIT DECOMPOSITION starts from a bruise which opens tiny holes and permits juice to escape and BACTERIA to enter. "Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, destroy BACTERIA and FUNGUS SPORES and arrest decomposition.
United States Distributors, AMERICAN SALES AGENCIES CO., 112 Market Street, San Francisco, California.

SIMONS, SHUTTLEWORTH & CO., Liverpool and Manchester

SIMONS & CO., LTD., Glasgow

GARCIA, JACOBS & CO., London

SIMONS (Southampton) LIMITED, Southampton

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.
12 South Market Street, Boston

OUR SPECIALTIES ARE APPLES AND PEARS

OREGON PACKING COMPANY

Canners of

FRUITS AND VEGETABLES

Write or Wire Us for Cash Prices On All Varieties of Fruits

Canneries located at

VANCOUVER, WASH.
LEWISTON, IDAHO.
SALEM, OREGON.

Main Office

E. 6th & ALDER STREETS,
PORTLAND, OREGON.

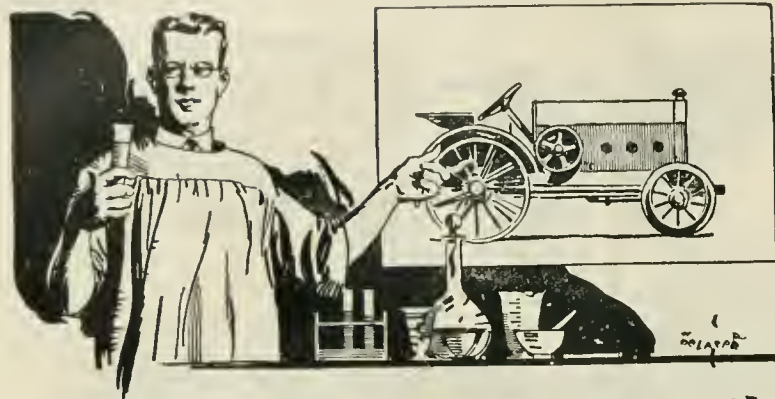
**Clark County
Strawberries
Now
Ready**

Gold Dollar, Marshall, Improved Oregon, Magoon
Clarke county growers have their own marketing agency.
We offer berries of standard grade, uniform pack and quality. Rigid inspection is maintained at receiving station.
Our central location and excellent transportation facilities enable us to give unusual service in filling orders.

All shipments are c. o. d. unless otherwise arranged.
Dealers will find our prices right, and our berries of highest quality. Wire us a trial order.

**WASHINGTON GROWERS' PACKING
CORPORATION**

507½ Main Street
Vancouver, Washington



A pure lubricating oil

"Zerolene oils are pure. The Standard Oil Company has always considered the removal of all detrimental properties and compounds as essential in making Zerolene."

— Board of Lubrication Engineers.

Zerolene in a good truck or tractor keeps your working equipment on the job—hour by hour—day after day—without a stop for the breakdowns of incorrect lubrication.

Because of its purity, Zerolene eliminates engine trouble. It gives perfect lubrication, and when it works into the combustion chamber, as any oil will do, it burns clean. Zerolene deposits a minimum of carbon, of a soft and flaky nature, most of which is blown out harmlessly with the exhaust.

Stability — Oiliness

The ideal motor oil, besides having purity, must be stable to resist engine heat. It must cling evenly to bearing surfaces, and must also flow freely and permit the development of maximum engine power and speed.

Zerolene is refined from crudes carefully selected for stability and oiliness, and our exclusive high vacuum refining process retains these qualities in their highest form.

Consult the Zerolene Correct Lubrication Chart for the correct grade for your tractor, truck or automobile.

STANDARD OIL COMPANY
(California)



more power & speed ~
less friction and wear ~
thru *Correct Lubrication*

WRITE
RIGHT
NOW!

For our Book "DEHYDRATION of FOOD PRODUCTS"
—It's Free. There is a best way to dry APPLES, PRUNES, etc.

Stephenson-Schaller Co.
ENGINEERS - MANUFACTURERS
SAN FRANCISCO

We Build Best
Plants for
Dehydration of
Fruits and
Vegetables at
Low Cost

Address 312 Liberty Bank Building, San Francisco

M. E. HENDERSON of Bellingham has purchased the Blaine fruit cannery, which employs 25 persons and has been in operation only one season. He will move into larger quarters and plans to pack both fruits and vegetables.

CALIFORNIA

RATHER serious damage to strawberry plants around Florin by the root worm, sometimes called the strawberry leaf beetle, is reported by County Horticultural Commissioner A. E. Morrison.

UNDER authorization of the Los Angeles county board of supervisors, four inspectors are making a survey to determine the extent in that county of eelworm infestation. A. L. Flinn, William C. Parsons and J. F. Moore have been assigned to this work, under direction of K. L. Wolff.

HEAVY damage was sustained by pears in the Fruitridge and Camino sections, it has been reported, as result of a heavy fall of wet snow in April. Heavy breakage of limbs rather than cold inflicted the damage.

C. E. SCOTT, graduate of Stanford University, and for two years a teacher in the San Mateo High School, has taken a position as assistant plant pathologist with the State Department of Agriculture.

THE first box of cherries sent out the current season from Vacaville went forward to New York on April 27. It was handled by the California Fruit Distributors.

THE FIRM of T. J. Poupart, Ltd., which handled more than 300 cars of northwestern apples last season, has entered the Redlands district for the purpose of handling oranges, soft fruits and apples. Sam P. Birch, whose headquarters are at Portland, Ore., recently visited the district to complete arrangements for representation there.

OFFICERS for the year have been elected by the California Cherry Growers' Association as follows: F. W. Maddocks, president; A. B. Haslander, vice-president; C. Long, Jr., secretary. The annual meeting was held in San Francisco.

SEVENTY acres in the Carpinteria Valley were this spring planted to Placentia walnuts. This acreage is on the Bailard ranch and smaller tracts were planted elsewhere.

IT IS estimated by Horticultural Commissioner L. O. Haupt that between 30 and 40 cars of Tragedy plums will be shipped east as fresh fruit from Kings county this season. Last year such shipments amounted to 23 cars.

THE University of California College of Agriculture is now offering a correspondence course in cherry raising, embracing twelve lessons.

BUYERS are contracting a limited supply of dried pears of the 1922 crop in Sonoma county at 13 cents per pound, according to H. M. Winter.

THE California Fruit Distributors of Sacramento have organized a sales agency for the handling of the 1922 deciduous fruit crop. The organization maintains thirty offices in larger cities of the country and is represented by 175 brokers in smaller markets.

INCORPORATION of the Berryessa Pear Orchards Company, with headquarters in Oakland, has been effected and the company contemplates erection of a cannery.

A. J. STURTEVANT, Jr., resigned April 1, as general sales and advertising manager of the California Peach and Fig Growers. He has been succeeded by E. S. Moorhead.

IDAHO

FROM JULY 1, 1921, to March 1, 1922, the Idaho inspection service of the State Department of Agriculture inspected 13,161 cars of fruits, vegetables and hay, produced last season. Of the total, 8,539 cars were potatoes, 3,055 apples, 1,475 prunes, 23 peaches, 11 cherries and 2 pears.

▲ ▲ ▲

ESTIMATES made at Twin Falls place shipments of Iceburg lettuce from the state this season at 500 cars. Last season there was a small acreage about Twin Falls which this year has been greatly expanded, in a general way including the potato-raising districts.

▲ ▲ ▲

D. B. WIELAN has been appointed entomologist of the University Extension Division, with headquarters in Boise. He succeeds Claude Wakeland, who has become the experiment station entomologist.

▲ ▲ ▲

STOCKHOLDERS of the Coeur d'Alene Canning Company have voted to increase the capital stock from 100,000 to 200,000 shares. Officers reported that eastern orders for fall delivery already include seven cars of apples and one and one-half cars of gooseberries, cherries and prunes.

Purity



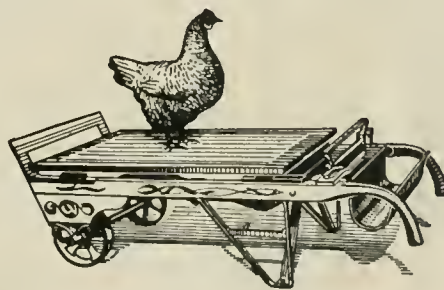
Air, dust, dirt and all that goes with them—these are the enemies of chocolate purity. And these are locked out of Ghirardelli's by "locking" the chocolate in the tin. It is the tin that enables Ghirardelli's Ground Chocolate to reach your table as pure, clean and flavor-fresh as the hour it leaves our factory. Ask for Ghirardelli's at the store where you trade and send for recipe booklet.

Say "Gear-ar-delly"

Since 1852 D. GHIRARDELLI CO. San Francisco

GHIRARDELLI'S Ground CHOCOLATE

THE JUNE DROP



Weighs accurately from 1 pound to 1 ton

THE RENFREW TRUCK SCALE price drops. The RENFREW will weigh anything and can be wheeled anywhere like a hand truck.

The ANKER-HOLTH CREAM SEPARATOR also reduced in price again. Now is the time to buy for there is no indication of any further drop.

No better machine made than the ANKER-HOLTH, the separator with the SELF-BALANCING BOWL.

The PERFECTION MILKING MACHINE also takes a drop and the PERFECTION you know takes the lead.

The J. C. Robinson Company
49 First Street, Portland, Oregon

Washington Growers' Corporation Notes

CLARKE COUNTY reports more or less damage done to strawberries by the weevil. A number of growers were compelled to plow up part of their acreage.

▲ ▲ ▲

FINAL payment to the members of the Washington Growers' Packing Corporation for their prunes was made a few days ago. Although the 1921 yield was light, the returns through the association were exceptionally good, in many instances averaging sixty dollars a ton more than that received by independent growers who sold their entire crop early in the season. The average paid the association members was eleven cents a pound and for the extremely large prunes sixteen cents a pound.

This remarkable record was due partly to the exceptionally fine pack of prunes which always brought top prices and partly to the low overhead which almost set a new record.

▲ ▲ ▲

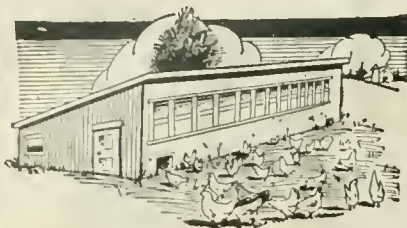
A COMPLETE clean-up of the 1921 crop prunes is reported from association offices in Clarke county. For this reason a brisk demand for new crop prunes is expected in the fall.

▲ ▲ ▲

FOUR tons of dried prunes to the car are reported by the Association from the orchard of Abel Johnson located in Fruit Valley, about a mile north of the city limits of Vancouver. For these prunes Mr. Johnson received between \$180 and \$200 a ton. An orchard belonging to John Spurgeon in the same locality produced well over three tons of dried prunes to the acre.

▲ ▲ ▲

THE potato department of the packing corporation in Clarke county reports its 1921 stocks all cleaned up. Fifty carloads of seed potatoes were shipped to California points. Certified seed brought an average of well over \$3 a hundred pounds, and was in strong demand. J. E. Larson, manager of the potato department, has tendered his resignation, to become effective soon. Mr. Larson will enter business for himself. His knowledge and untiring efforts in behalf of the potato industry of Clarke county have been much appreciated.



SASH AND DOORS

O. B. Williams Co.

1943 First Avenue South, Seattle

Chicken House Sash

20 in. wide by 25 in. high, 80c
A dozen different sizes in stock for immediate shipment

Sky Lights for Chicken Houses

36 in. by 40 in.; price glazed, \$2.00
This is the size recommended by the Western Washington Experiment Station—we carry them in stock for immediate shipment. Sash and Doors for all purposes at lowest prices. All orders receive prompt attention. Our large illustrated catalogue No. 19, showing full line of building material and built-in fixtures for the home, free on request.

O. B. Williams Co.

Established 1899

Arrow Carbolineum

(Formerly Avenarius Carbolineum)

Protects poultry against vermin—Preserves wood against decay. When you buy Carbolineum be sure you get Carbolineum and not something called just as good. Write for prices and circulars.

CARBOLINEUM WOOD PRESERVING COMPANY

222 E. Water St. Portland, Oregon



The **ARCADY Company**
Advertising

Anyone whose business involves personal salesmanship can profitably use the right kind of advertising literature. Did you ever stop to think, for instance, that the printed page can call on your trade at about 2 per cent of the cost of personal selling.

Why not let one of our representatives tell you more about printed salesmanship.

Arcady Building • 12th & Jefferson Sts. Portland, Oregon

Also PRINTING
MULTIGRAPHING
ADDRESSING
MAILING
MAILING LISTS

**MAIN
8829**

This Publication is a product of our Printing Department

With the Poultry

STIMULANTS FOR HENS

A FLOCK of laying hens in good health has no need for condiments, say poultrymen of the United States Department of Agriculture. A hen whose digestive apparatus is in good working order needs no more stimulation for egg production than is provided by a good, well balanced ration, proper care and housing. But when hens are off their feed and look dumpish a little jigger of pepper or something of the sort in the ration may cause them to pick up and run on all cylinders again.

Various snappy and pungent condiments are used for the purpose, but the following mixture has been found as good as any and may be made up by the flock owner at low cost: Mix equal parts of ground red pepper, ground allspice, ground ginger and ground cloves, and one-half part of ground fenugreek seed. Many of the condiments sold to flock owners are largely filler and sell for a high price. In the mixture given there is nothing but essentials. A tablespoonful of the mixture in 2 quarts of moist mash 2 or 3 times a week or a teaspoonful in 1 quart daily should be fed until the birds are back in good order.

It is not good practice for poultrymen to feed these things when the flock is in good appetite. When feed attracts hens little more can be done to stimulate the egg organs.

▲ ▲ ▲

REMEDY FOR TOE PICKING

TO CHECK and prevent toe-picking, one authority suggests, first of all, the use of salt. Dissolve one teaspoonful of salt in one quart of water. Place this where it is accessible to the chicks for one-half hour each morning for four days. This will be long enough for them to drink and still not long enough for them to take more than is good for them, which will cause inflammation. It takes about four days to cure chicks of this habit.

It is also well to use a tablespoonful of epsom salts in the drinking water once a week. This acts differently from ordinary salt and is in some respects a food for poultry. A direct sunlight shining on the toes makes them appear like attractive worms. To avoid this place an opaque covering over the windows to diffuse the sunlight. Then provide a litter of straw so that they will be kept busy. This also will hide the toes to some extent.

Do not keep the brooder house too warm. It is safer to keep the brooder house as cool as possible and at the same time keep it warm enough so that the chicks will not crowd. Provide a plentiful supply of fresh air at all times, both day and night. Let the chicks out in runs and on the ground as soon as possible. It is usually safe to do this, weather permitting, when the chicks are a week old.

▲ ▲ ▲

THAT CRITICAL PERIOD

INASMUCH as the first three weeks of the chicken's life is the critical and uncertain period, this is the time it needs the most careful attention. If any of your chicks show leg-weakness, give plenty of exercise and get them out of doors in the middle of the day at least. They will be all right after ten days.

Watch the chicks and do not let them huddle in a corner until chilled. At this stage of their lives they lack chicken sense and must be taught needed lessons.

Sometimes a curtain over the window to keep out the direct warm sun rays will help teach them to seek the warmth of the hover when needed.

You must have purebred stock and perfect conditions for brooding, but if the food is not right in

quality and quantity, your labor is lost. Bear in mind that warmth, cleanliness and fresh, clean drinking water are all necessary in starting little chicks on the right road.

▲ ▲ ▲

NOVEL INCENTIVE FOR HENS

IT HAS remained for a California man to devise the most unusual method of encouraging hens to lay. John C. Hayes of Alameda county has reported success with a novel experiment. During his spare time, Mr. Hayes, who looks after a beautiful suburban place near Burbank, claims to have discovered a method which has increased the egg production of his poultry yard 40 percent.

Hayes acted upon the psychology that one hen seeing another in the act of laying an egg would do her best to emulate the act of her prolific sister. He therefore secured a dead hen, had it mounted in a laying position by a taxidermist and placed it in one of the nests in his hen house. The results, Hayes said, were marvelous.

▲ ▲ ▲

IF THE growing fowls are troubled with leg weakness, give them a mixture of bran, cut clover hay, linseed meal and cut green bone and meat. A little slaked lime in the drinking water may also help.

Statement of Ownership

STATEMENT of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of the Better Fruit, published monthly at Portland, Oregon, for April 1, 1922.

State of Oregon, County of Multnomah—Before me, a notary public in and for the state and county aforesaid, personally appeared C. J. Owen, who, having been duly sworn according to law, deposes and says that he is the 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 managers are:

Publisher, Better Fruit Publishing Company, Inc., 281 12th St., Portland, Oregon. Editor, Ernest C. Potts, 902 E. 27th St. N., Portland, Oregon. Managing Editor, Jerrold Owen, 281 12th St., Portland, Oregon. Business Manager, C. J. Owen, 281 12th St., Portland, 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 1 per cent or more of the total amount of stock).

Owner, Better Fruit Publishing Company, Inc., Portland, Oregon. Stockholders, Jerrold Owen, 281 12th St., Portland, Oregon; D. L. Carpenter, 800 Oregonian Bldg., Portland, Oregon; E. E. Faville, 800 Oregonian Bldg., Portland, Oregon; A. W. Stypes, 800 Oregonian Bldg., Portland, Oregon.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the 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 stockholders 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.

C. J. OWEN,
Business Manager.

Sworn to and subscribed before me this first day of April, 1922.

(SEAL)

GEORGE H. CARR,
Notary Public for Oregon.

(My commission expires April 29, 1925.)

Marketing News of Interest

SEVERAL markets, including that of New York, report that fancy apples are scarce. Supplies continue quite moderate and are varied as to quality and condition. Some received in New York show signs of scald and the effects of holding.

The demand for fancy large northwestern boxed apples has continued good in New York, with prices tending upward. The third week in May Newtown Pippins and Winesaps brought \$2.00 to \$5.25, and Bens, \$2.00 to \$4.00. California fancy yellow Newtowns of small size sold generally at \$2.60 to \$2.65; fancy large Spitzenbergs brought \$3.25 to \$3.75 and medium to small marks \$2.50 to \$3.00 per box.

▲ ▲ ▲

ROUNDING out its needs of 2,000 cars of boxed apples to fill its line of fruits and vegetables, the Associated Fruit Company of Chicago, general distributors, expects to contract 500 cars in the Spokane valley, according to S. H. Boddinhouse, sales manager, who has been in the district meeting growers. The company recently purchased the warehouse and boarding house of the defunct Spokane Growers' Company at Otis Orchards and the warehouse at Park's Spur.

▲ ▲ ▲

THE peach crop of Texas will be almost a total loss as a result of the peculiar after effect of the freeze of March 1, according to information being gathered by entomologists of the state. The loss became apparent only two weeks ago and indications are that in many places where peaches are an important money crop and where many carloads are shipped annually, the yield will hardly be sufficient to harvest.

▲ ▲ ▲

WORK tending toward establishment of the headquarters of the Northwestern Fruit Exporters, Inc., is going ahead rapidly at Seattle, and the organization will be working long before time for the season's business to begin. Branches are planned for Hood River, Yakima, Wenatchee, London and Portland, Ore., and the London office will be kept open the entire year. The incorporators are H. F. Davidson of Hood River; Edwin Smith of Wenatchee, and J. MacPhee Ferguson of Yakima. The individual members will continue their operations independently, but will combine when it comes to the export trade.

▲ ▲ ▲

L. F. HENDERSON, pioneer pear grower of Hood River says that in all of his experience here he had never seen pear blossoms heavier than this season. He declares that the crop will be a record one if only one of every ten pears set.

▲ ▲ ▲

PRUNE sales in early May on the New York market brought firm and rising quotations. California packers were quoting 25 cents for 20s, with smaller grades in proportion, f. o. b. San Francisco.

Bulletin for Poultrymen

"Suggestive Points on Hatching and Feeding Chicks" is the title of a new circular by H. E. Cosby, just issued by the extension service of the Oregon Agricultural College. Mr. Cosby is extension specialist in poultry husbandry. Subjects explained include selection and care of eggs for incubation, operation of the incubator, brooder preparation, chief causes of chick losses, feeding principles, and a tentative feeding schedule.

Beekeeping Commercialized

By A. SWAHN

THE TIME is coming, and not in the distant future either, when beekeepers must put the honey industry on a business basis the same as all other successful business enterprises. In other words, it must be commercialized.

In the honey industry, like any other business, we cannot expect the best results without trained brains, without work and without proper investment. We cannot expect to meet competition by sitting around pitying ourselves, and bemoaning the fact that the big fellows in the business are making money. Why do they make money? Simply because they put both money and brains behind their business.

The old adage, "The pen is mightier than the sword," might be modernized and brought to date by a new adage, "The pencil is mightier than the plow." This means that if we use our brains and a pencil, as well as the necessary capital, we will find means by which we can eliminate the hard work of holding the old plow, and pounding old Dobbin on the back.

Do like the big fellows in other industries. Systematize your work.

The secret of successful beekeeping is intelligent management, co-operation and maintaining fair prices. The very men who kill prices are the ones who do the most kicking about the high cost of supplies and the low price of honey.

Every time you feel that some one should be kicked, ask some of your kind and obliging friends to kick you first, and the chances are that the right party will receive the kick.

Think more about your own faults and shortcomings, and less about the faults of others, and the present dark cloud will soon turn toward you its silver lining.

We have enough beekeepers, but not enough bees. We will now consider the point around which the success of the whole industry turns, viz: The cost of production. There are three ways to increase the profits of any business:

First—Better prices without increase in cost of production.

Second—Decrease in cost of production without a corresponding decrease in selling price.

Third—Increase in the turnover. Applied to beekeeping this means more honey without an increased operating expense.

A great many beekeepers have the wrong idea in thinking that the only way to make more money is to get higher prices. We should consider the cost of production a great deal more than the selling price. It is the cost of doing business that ruins so many business men. While it is true that the local prices are often established by the smaller beekeepers, it is also true that the wholesale or quantity prices are established by the real commercial beekeepers who keep a large number of colonies.

We who have only 75 to 100 colonies, must not think we are commercial beekeepers in the true sense of the word, and unless we have some other source of revenue will not get to first base in a profit comparison with some of the large beekeepers who keep from 500 to several thousand colonies. They can sell at a profit for less than it costs us to produce.

We must do one of three things. Do less work with our present number of colonies, and more in some other line of business, or keep more bees with better working methods, or stop kicking because the other fellow can undersell us at a profit.

Commercial beekeeping means business beekeeping where cost is considered more than selling price. In other lines of business the selling price is usually established by keen competition, and success depends mainly on the cost of doing business. The same rule must be applied to the honey industry in order to make it a greater success.



FOR FARMERS WHO GROW FRUIT

Every farmer with an apple or peach orchard will find much of interest in each issue of this live monthly bulletin. Published to promote better practice in handling fruit crops. Subscription price one dollar a year. Mailed FREE to any large fruit packer or grower.

Skinner Packing House News
Third St.
Dunedin Florida

B E E S
The Diamond Match Company

APIARY DEPARTMENT
Manufacturers of Bee Keepers' Supplies
Chico, California, U. S. A.
(The largest bee hive factory in the world)

Write for catalog and discount sheet; and, if a beginner, for Cottage Bee-Keeping, also for particulars of the MacDonald Aluminum Combs.

Complete line of
QUALITY BEE SUPPLIES
AT REDUCED PRICES
Immediate Service
Every pound of SUPERIOR foundation used on your bees virtually saves from 10 to 15 lbs. of honey.
Write us and we will explain.
Superior Honey Co.
Ogden, Utah



DEPT. B.

Rubber Stamps for Fruit Boxes

Write for Sample and Prices to
ROGERS COMPANY
Gerlinger Bldg., PORTLAND, ORE.

Classified Advertisements

RATES, 4 CENTS PER WORD

NURSERY STOCK

BLACKBERRY PLANTS—Cory's Thornless. Requires less sugar in cooking than any other. Macatawa—Raspberries. Alton Improved—Ranere—Blackcaps—Loganberry—Rhubarb roots. Jno. Lammiman, Rt. 1, Palo Alto.

PLANT—The new Red Gravenstein apple. Thoroughly proven for the coast. Better than the old Gravenstein. Its bright red color increases market value. Write for information. WASHINGTON NURSERY CO., Toppenish, Wash.

BEEES

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. "Everything in Bee Supplies." Superior Honey Co., Ogden, Utah.

FOR SALE—Gentle, Prolific Italian Queen Bees. Let the bees pollenate your blossoms and store honey for you. Directions for introducing with each shipment. Circular free. J. D. Harrah, Freewater, Oregon.

POULTRY

S. C. BUFF LEGHORNS—Just won fifth cockerel, Chicago Coliseum. Cockerels and eggs. M. H. Mann, Wood Cross, Utah.

500,000 WHITE LEGHORN Baby Chicks—Bred for eggs, vigor, size. Safe arrival in good condition guaranteed. Free catalog and book on "Raising the Chicks." Oak Heights Poultry Farm, Route 3, Box 67B, Tacoma, Wash.

REAL ESTATE

CUT-OVER and Developed Lands, 15 to 25 miles N. E. Spokane; extra good soil; spring brooks; grows grain, vegetables, hay, fruits; several developed ranches; few stock ranches; \$10 to \$20 acre; 10 years' time, 6 per cent interest. Free lumber. Write owners for free book. Edwards & Bradford Lumber Co., Elk, Wash.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

MISCELLANEOUS

EASTERN WHITE OAK KEGS—1 gal. plain, \$1.40; charred, \$1.60; 2 gal. plain, \$1.60 charred, \$1.80; 3 gal. plain, \$1.90; charred, \$2.10; 5 gal. plain, \$2.50; charred, \$3.00; 10 gal. plain, \$3.50; charred, \$4.00. Sent by express anywhere—Check must accompany order. Packed in boxes if desired. Write for wholesale prices. Panama Cooperage Co. Front & Salmon, Portland, Oregon

TRACTOR BARGAINS—Cletrac "W," only demonstrated, \$1250; Cletrac "W" rebuilt, good as new, \$1000; Cleveland model "H," never used, \$1100; Cleveland "H," slightly used, snap at \$750; Oldsmar Garden Tractor demonstrator, \$390. O. V. Badley, 425 E. Morrison, St., Portland, Oregon.

BEFORE BUYING—Have an experienced horticulturist examine your orchard for you. I saved one man \$5,000 on a \$14,000 deal. Special attention given to orchards of non-resident owners. Private demonstrations and consultations given. Luke Powell, Yakima, Wash., consulting horticulturist. (I do not sell real estate.)

OLD FASHIONED TENNESSEE RED LEAF tobacco, 10 lbs., No. 1, \$3.50; 10 lbs., No. 2, \$3; 10 lbs., Old Kentucky Burley, \$5. All prepaid; satisfaction or money back. Jim Foy, Dukedom, Tennessee. Reference, Dukedom bank.

TRY OUR EARLIEST OF ALL, or Six Weeks potatoes. Also our Wonderful Hardy Hybrid Alfalfa. J. L. Lawson, Reliable Seed and Nurseryman, San Jose, California.

TOBACCO—Natural leaf chewing and smoking. Rich ripe two year old. 5 lbs. \$1.75; 10 lbs. \$3. Sample, 20 cents. Maddox Bros., Dept. 30, Mayfield, Ky.



Preserving time — and a cool kitchen

Make canning time a real pleasure this year by using a good oil cook-stove. It concentrates a steady, controlled heat directly under the utensil. Your task is shortened and your kitchen is kept cool, clean and comfortable.

To insure best results, use only Pearl Oil—the clean-burning, uniform kerosene—refined and re-refined by a special process.

Sold by dealers everywhere. Order by name—Pearl Oil.

STANDARD OIL COMPANY
(California)

PEARL OIL

(KEROSENE)
HEAT AND LIGHT



STANDARD OIL COMPANY
(California)

HOMESPUN CHEWING OR SMOKING TOBACCO—5 lbs., \$1.25; 10 lbs., \$2.50; 20 lbs., \$4.50. Farmers Union, Mayfield, Ky.

TILlicum—A fluid grafting and covering wax; no heating required, \$1.25 a quart prepaid. Paul Kruger, Watsonville, California.

SALESMEN WANTED

MEN with proven ability capable of selling a line of high grade nursery stock on a commission contract. Weekly cash advance. Splendid territory may be had by answering immediately. SALEM NURSERY CO.
427 Oregon Building Salem, Oregon

POSITIONS

WANTED—Men, Boys over 17. Become Railway Mail Clerks. Commence \$133 month. Common education sufficient. List positions free. Write immediately. Franklin Institute, Dept. E105, Rochester, N. Y.

LET US HANDLE
your Apples, Pears, Peaches,
Potatoes, and all kinds of Fruit
and Produce.

Cash or Consignment

Write us what you have to offer. We give prompt service.

PORTLAND PRODUCE DISTRIBUTORS

215-217 Washington St.
Portland, Oregon

long-life

a built-in quality of

Finest qualities of steel and extremely exacting standards of manufacture contribute to the rugged strength and unmatched endurance of "Caterpillar" T-35 Tractor.

Highest grade materials are used—nickel steel, chrome nickel steel, chrome vanadium steel, saw steel—there is not a carbon steel gear or shaft in the entire tractor. All bearings—except, of course, in the motor—are anti-friction: ball, roller or tapered roller. Perfect lubrication and complete enclosure from dust and dirt further insure long life.

Many of the first "Caterpillar" Tractors built are still doing daily duty. Model T-35 possesses, in a highly developed degree, the same qualities that have made that record possible. That means that it will do your work dependably and economically. A Pacific Coast factory and service organization mean that you get real service—quickly. Write at once for complete catalog.

THE HOLT MANUFACTURING CO.

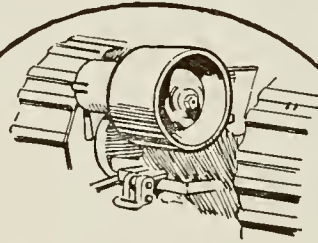
Spokane, Wash.

Factories at Stockton, Calif., and Peoria, Ill.

Oregon Representative, J. W. Hill, Henry Bldg.
Portland

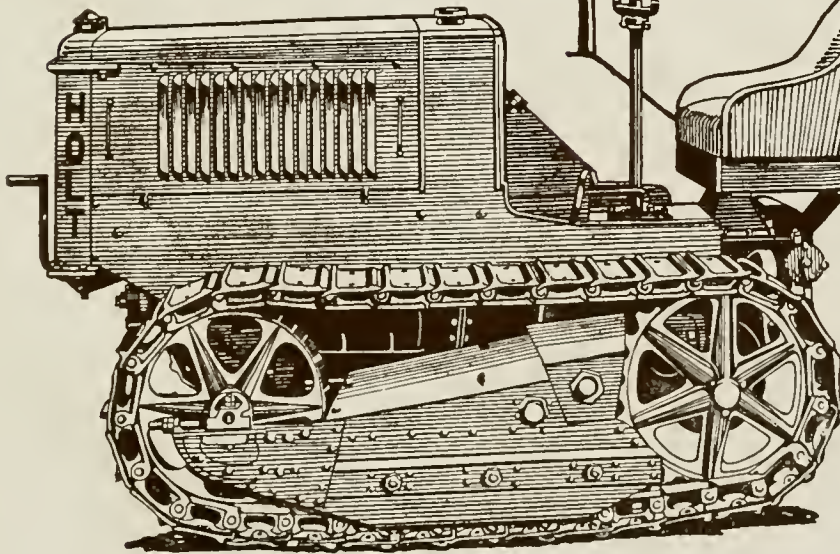
CATERPILLAR

T-35 tractor



For Belt Jobs

The belt pulley unit gives the T-35 Tractor a vast field of usefulness for stationary work in addition to the innumerable tractive jobs it will handle. With it you can pump, grind, saw and do other belt jobs easily and quickly. The belt pulley operates at 3,000 feet per minute belt speed.



There's
only one
Caterpillar
Holt
builds it

The World Our Orchard

“Throw Medicines to the Dogs.”

(Shakespeare)

EAT APPLES

Don't look at the Brands—all apples are good, some are better. Brands don't mean anything.

Whether packed in boxes or barrels or drygoods cases does not make them any the less healthy. Apples are nature's remedy and most efficient tonic.

Apples, like bread, are the UNIVERSAL FOOD.

Apples at breakfast are nature's physic.

Apples at luncheon are nature's tonic.

Apples at dinner are better than any medicine for your digestive organs.

Apples immediately before retiring are nature's greatest and best dentifrice.

This advertisement is the first of a series of short and trenchant articles which we will publish from time to time, with the object of increasing the consumption of apples regardless of Brands or where they were raised. We believe this the wisest method of putting before the consuming public the real value of all apples, and increasing the sales thereof.

Our Market, The World

Steinhardt & Kelly

273-277 Washington Street

NEW YORK

102-106 Warren Street

Cordoba 2260 Buenos Aires
ARGENTINE

Rua de Rosario 102 Rio de Janeiro
BRAZIL

FIELD OFFICES:

Rocky Ford, Colo.
Phoenix, Ariz.
Las Cruces, N. Mex.

Carlsbad, Cal.
Brawley, Cal.
Tampa, Fla.

Laredo, Tex.
Clearwater, Fla.
Calipatria, Cal.

Yakima, Wash.
Wenatchee, Wash.

New York Botanical Garden Library



3 5185 00259 1509

