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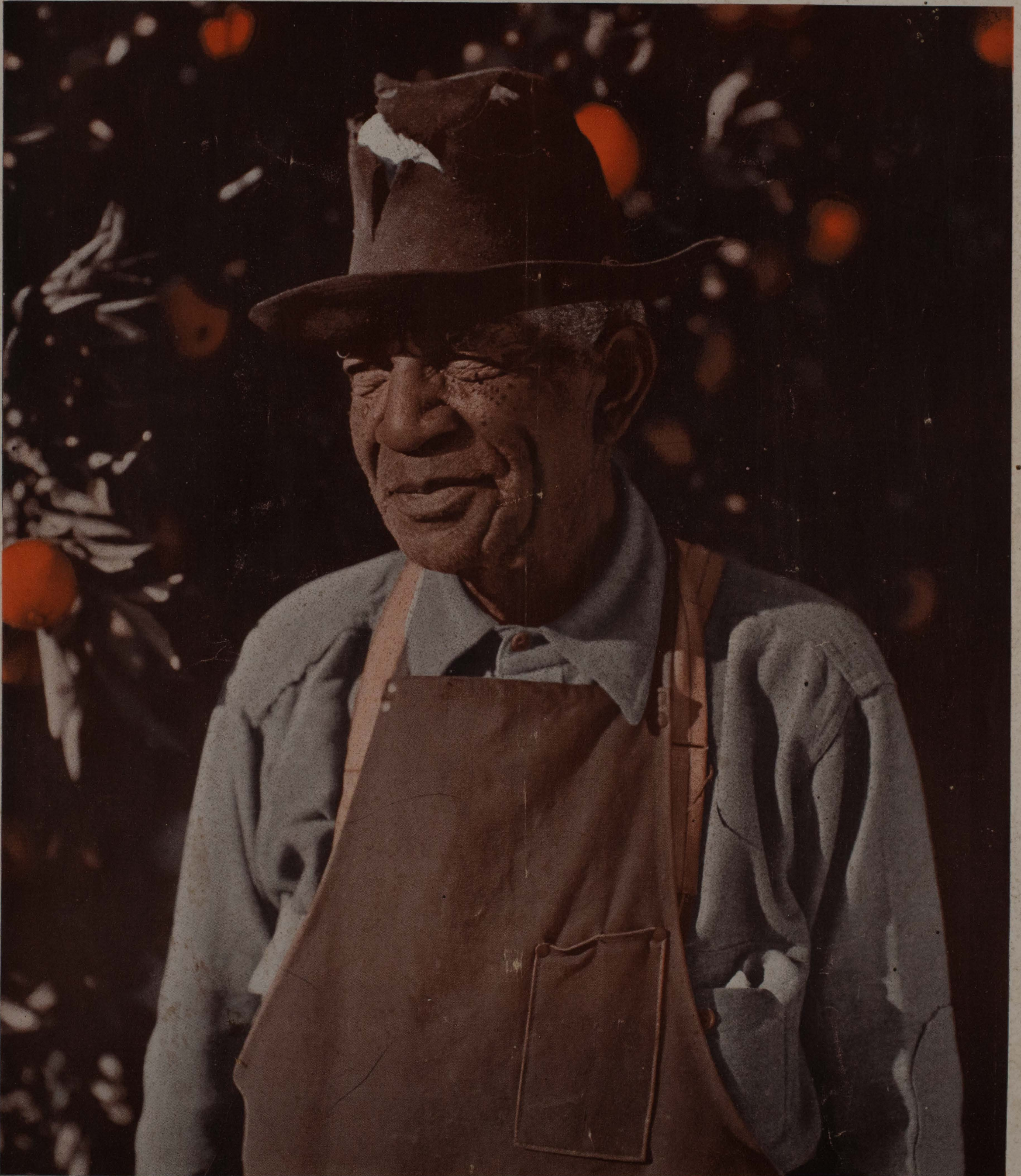
The California

Citrograph

ONE DOLLAR A YEAR
TEN CENTS A COPY

A Monthly Publication Devoted to the Interests of the Citrus Industry

OCTOBER, 1936
VOL. 21, NO. 12



Faithful Citrus Worker in One Family's Service 52 Years

(See article inside)

The Crop You Expect—and
The Crop You Get—



make them the same with
FUMIGATION

Anticipation of future profits from your crop is a pleasant source of enjoyment, particularly when after months of effort and expense, your expectations are realized. To achieve these results, an abundance of first quality fruit must be produced, which is possible only in scale free, healthy trees.

To make sure you will not be disappointed when your crop is marketed, have your grove fumigated. This treatment will not impair the normal functions of the tree, nor will it effect the color or keeping quality of the fruit.

Fumigated Trees produce quality fruit.

FUMIGATE WITH
HYDRO-CY

Trade Mark

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

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Rehearsal for Fire Combat

Lindsay's volunteer fire department is doing something which might with profit be copied quite generally in the citrus districts. It holds what the local paper calls "dress rehearsals" of fighting a theoretical blaze in the local packing houses. The plan of campaign for checking the fire in an incipient stage is worked out by the men on the ground when no fire is raging. Chief Demany thus rehearses his force in the proper method of attack and familiarizes them with the layout in the house and how the hose lines should be laid for most effective control. The men are thereby made familiar with what should be done in case fire does develop.



Not For California or Arizona

Recently issued advice from the department of agriculture at Washington advising the "pulling" of grapefruit from trees, instead of clipping it, evidently was not intended for California or Arizona application.

Pulling the fruit instead of clipping and then the application of a borax bath was suggested as a preventive measure against stem end rot of grapefruit, a trouble which we do not have to combat here. The advice evidently is more particularly adaptable to Florida, Porto Rico and Cuba where the disease is a real menace.

Those who know their subject say that pulling the fruit would result in more decay of California grapefruit under our climatic conditions than the painstaking clipping method now used here.



Rigid Inspection for Color Added Fruit

On the promise from a representative group of Florida citrus growers, that only very good fruit would be utilized when the dipping process is used for coloring of oranges, Secretary Wallace extended the time during which "color added" fruit may be shipped into interstate commerce for one year until Sept. 1, 1937.

The statement was made that only harmless dyes would be used, ones which would have no effect on the eating quality of the fruit. It was agreed what the maturity standard and the juice content of oranges should be and that rigid inspection methods would be applied to fruit before it was submitted to the color adding process.



Texas Predicts Big Crop

There is considerable concern being displayed in Florida over Texas' preliminary estimate of eight million boxes of grapefruit for the coming season. Last year Texas shipped about two million boxes and it is estimated that another million boxes may have been used within the state. But to jump five million more to eight, in one season, gives some basis for a headache in marketing circles—particularly in Florida. However in California we have long admitted that grapefruit is strongly competitive with oranges. So we have something else to think about in addition to competition with our winter grapefruit.

If all our misfortunes were laid in one common heap, whence everyone must take an equal portion, most people would be contented to take their own and depart.—Socrates.

Approach Pruning Cautiously

For some unaccountable reason one of those periodic waves of rather drastic pruning of citrus orchards seems to be under way. Before doing drastic pruning, or in fact any pruning whatever, read A. D. Shamel's report of his experience in a test of pruned and unpruned orange trees, appearing elsewhere in this issue. After keeping the records of production on the same trees pruned and unpruned for 22 years his terse advice is to do little if any pruning. In other words if there is the slightest doubt about the matter, don't prune, he says.



A Lemon Orchid

Said C. F. Skirvin, who writes the column "Skinny Skribbles" in the *Santa Ana Journal*:

"The party who handed me a copy of the *California Citrograph* may have intended it as a courtesy, but a bunch of lemons on the title page provokes an element of suspicion. So I get inside as quickly as possible in order to continue an unbroken fellowship."

Columnist Skirvin need not feel so badly about that cluster of lemons. At market prices prevailing for the past few months—owing to short crop and high temperatures—those lemons would be worth nearly as much as a Winchell "orchid." So rest easy, Mr. Skirvin, you were not offered an insult.

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Southern Editor to Negro Farmers

On the occasion of a visit of agricultural editors of the United States to California a few years ago, it was the writer's good fortune to be thrown into close contact for a time with Editor "Cully" Cobb, formerly of the *Southern Ruralist* now printed in Alabama. He, born and bred in the south, is a real southerner and might be expected to have all the prejudices which whites "below the line" are supposed to hold concerning the colored race.

But "Cully" (C. A. Cobb), now director of the southern division of the AAA, has reacted to the responsibilities of his position just as we felt he would. He is just as keenly interested in the rehabilitation of the negro farmer as he is in that of the white farmers within his district.

This man, in addressing a conference of negro agricultural leaders and farmers, talked of the situation in which the colored man finds himself, openly and frankly, explaining, "born in the backwash of the Civil war days myself, I know at first hand that * * * progress has been made (by you) in the face of heavy handicaps." Then he goes on to say: "While the negro is very definitely on the way up, yet the most confirmed optimist must admit that his lot is difficult in many ways. The consoling fact is that it is by no means hopeless or impossible."

Then, commenting on the advance which the negro farmer has been making since the close of the Civil war, "Cully"—everyman's friend—says consolingly: "Slowly but steadily negroes have been acquiring land of their own. By 1930 approximately 181,061 farms totalling 11,198,893 acres, valued at \$228,709,241, were owned by negro farmers. * * * In view of all the circumstances I believe no other race in history has made more progress than that."

Concluding, Director Cobb declared: "The problems of the white farmer and the colored farmer are the same problems. A policy which helps one helps the other. There is no place for race prejudice in any national program for the welfare of agriculture."

Perhaps this doesn't have anything specifically to do with the citrus grower, but it does have something to do with humanity and we believe that the citrus grower is interested in any gain by any American farmer, be he black or be he white.



Saving In Organic Material

By growing winter cover crops the citrus grower can reduce his application of required organic fertilizers by one third and thereby save \$10 an acre on the costs of production, says Farm Advisor Rounds of Los Angeles county. The way he has it figured out is this: Based on past experience about 6000 pounds of organic matter are required per year on each acre of citrus groves in Southern California. The cost of this three tons, on the average, is \$30 per acre. The cost of planting cover crop is nominal, not over a dollar per acre.

The cover crop or green manure, supplies the equivalent of one third at least of the organic material generally accepted as needed. That one third of \$30 is \$10. Hence the saving indicated.

Valencia Market Continues Strong

As is usual in August, strong competition was encountered from the vast quantities of home and commercially grown peaches, pears, apples, cantaloupes, watermelons and other seasonal products that come into harvest during that month.

An unfavorable factor that was much more evident than in a number of years was the slump in demand on account of August vacationing.

By September 1 there remained to be shipped in fresh fruit channels some 11,000 cars of Valencias in the hands of all shippers, Exchange and outside combined, based on the estimate of the California-Arizona orange-grapefruit agency.

Cool weather during the first two weeks of August caused a slowing up in the demand for lemons. Consequently, supplies accumulated and prices ranged lower.

Sales for the month were slightly below the volume for August last year but considerably above average August sales.

August shipments this season were heavier than for any other year on record with the exception of last year, aggregating 1,552 cars, compared with average shipments for the month of 1,340 cars.

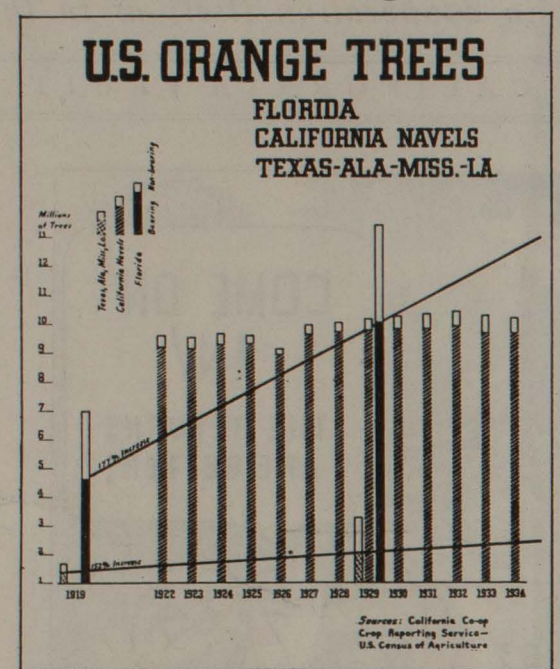
Grapefruit

Due to the light quantity of California grapefruit remaining, August shipments were very light. Although grapefruit consumption was drastically curtailed by competition from deciduous fruits and melons and other seasonal products, the reduction in shipments more than offset the lighter demand, and grapefruit prices advanced considerably over July sales.

A considerable proportion of the shipments went east in mixed cars with Valencias, as demand and movement did not justify the trade in

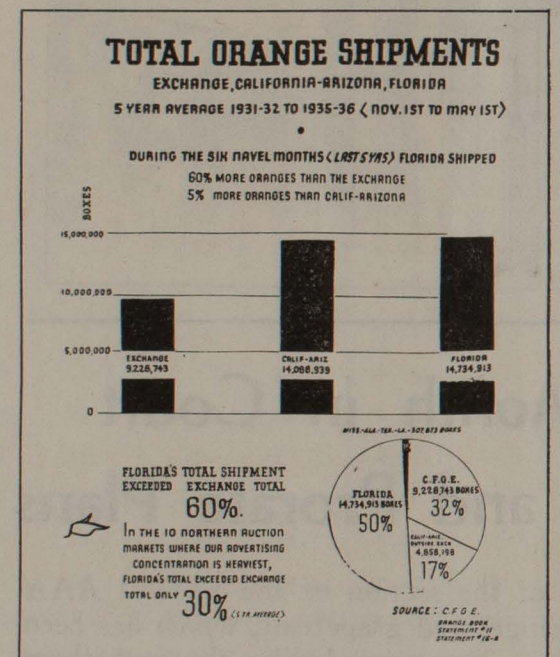
More Navel Advertising Voted for Next Season

Continued from Page 463



Florida orange trees increased in number 117% from 1919 to 1929, while California navels remained stationary, and have declined somewhat in number since 1929.

advertising agency and advertising department," Geisinger said.



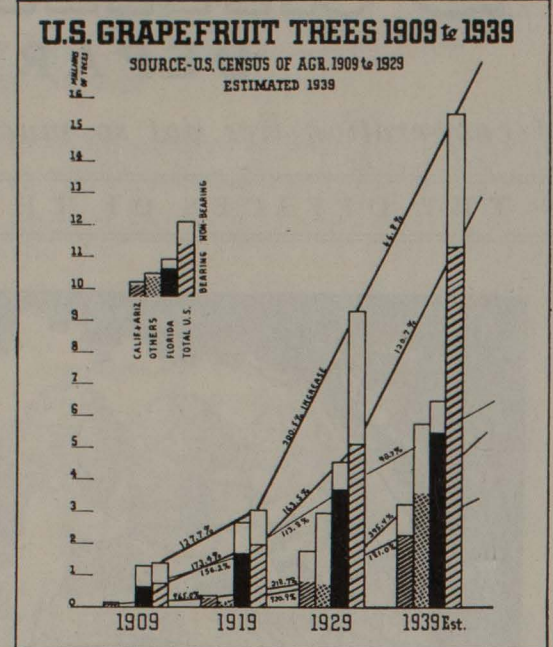
During the navel season, Florida shipped (last 5-yr. average) 5% more oranges than California and Arizona and 60% more oranges than the Exchange.

was unanimous, indicates the very general appreciation of our navel growers of the need for advertising many markets in attempting to handle carload quantities of grapefruit.

There is a very small quantity of the old crop remaining to be marketed after Sept. 1. This will be distributed principally in western markets. It is expected that a strong demand will prevail for the light quantity available before the movement of the new crops begins.

Florida shipments started with the movement of six cars during the week ending Sept. 1. Isle of Pines shipments were very heavy in August, considerably heavier than in recent years, and were practically the only source of supply other than California.

effort behind this variety, and we are certain the action is a wise one and will pay dividends to the growers."



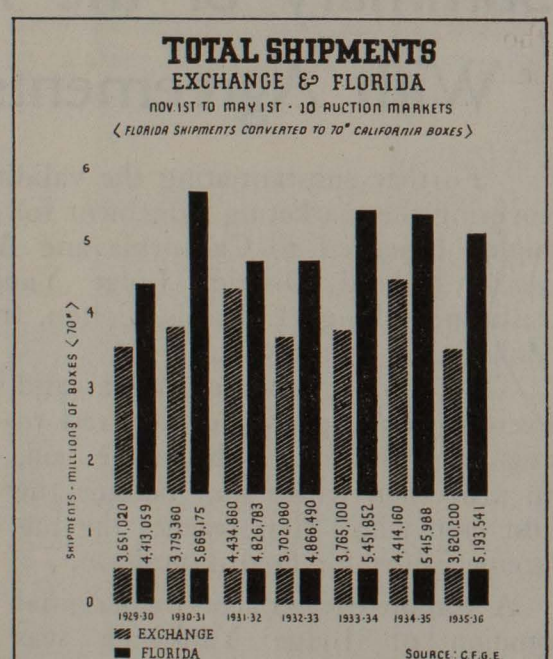
Note the rapid increase in grapefruit plantings in all states.

was the statement of General Manager Paul S. Armstrong.

"While many of us dislike increasing the competitive nature of our navel advertising, it seems the only thing to do under the circumstances," he said.

This aggressive move to hold and if possible improve the position of California Sunkist navels in the eastern markets during the Florida competitive season, is not without precedent.

Although 65 per cent of the new funds will go for space, dealer service work will also be increased and will



California navels have their most serious competition in the big eastern markets, where additional effort is needed if they are to hold their share of the business.

likewise be concentrated in competitive territory.

"The Sunkist navel campaign will begin in November when this variety begins to move to market. The basic campaign previously authorized includes use of magazines, newspapers, posters, and car cards. The increase will all be spent in point of sale advertising and merchandising in the eastern markets where 70 per cent of our fruit is sold and where we meet Florida in the increasing struggle for the preference of the American housewife," Geisinger stated.

\$1.35 Per Hundred Rate Receives Final Approval

At a meeting on September 10 of traffic executives of the eastern railroads, final approval was given to the recently announced \$1.35 per hundred citrus freight rate.

The Transcontinental Freight Bureau will now publish the new reduced rate and submit it to the Interstate Commerce Commission for approval. Following the 30-day statutory notice period, the rate should become effective before the start of the new shipping season.

Exchange General Manager Visits Eastern Salesmen

Paul S. Armstrong, general manager of the California Fruit Growers Exchange, T. H. Powell, general sales manager, and W. B. Geisinger, advertising manager, are making their annual tour of the sales divisions of the country, holding conferences at a central city in each division where the sales force of that territory forgather.

R. B. Wallace, assistant sales manager in charge of the f.o.b. territory, will attend the western division conference, while L. H. Wohlwend, orange sales manager, will take part in those in the other divisions.

At these meetings, intensive discussions are had of the business of the past year in each locality, and of the prospects for the forthcoming season. At the same time, the men in the markets are made acquainted with the conditions in California and the general plans and policies set by the Exchange board of directors for the immediate future.

Directors Inspecting Supply Lumber Mills

The operating committee and management of the Fruit Growers Supply Company is making its annual inspection trip to the lumbering operations in Lassen and Susanville. Several other lumber mills will be visited on the way.

This close supervision insures to the grower the utmost economy consistent with efficiency and illustrates the fact that although the California Fruit Growers Exchange, of which the Supply Company is the purchasing division, is a large organization and represents many growers, each phase of its activities has the most detailed attention.

Florida Citrus Exchange Loses President by Death

The California Fruit Growers Exchange extends its sincere sympathy to the Florida Citrus Exchange in the death some weeks ago of its president, John S. Taylor. Mr. Taylor was associated with the citrus industry since his childhood and had large citrus holdings. He was chairman of the first citrus control committee which administered the federal citrus marketing agreement, and at the time of his death was a member of the Florida citrus commission.

Research Shows Navels Richer in Vitamin C

Of great interest to California navel orange growers, as well as to orange juice consumers and chemists, are the results of analysis of the juice of more than a carload of oranges—California navels and Florida varieties—to test richness in vitamin C. The research was done for the California Fruit Growers Exchange by three leading eastern chemical laboratories, none of which knew of the other's similar tests.

A. J. Lorenz, director of nutritional research for the Exchange, reported on this research to the American Chemical Society in session in Pittsburgh early in September.

Juice of the California navel oranges showed up 22 per cent ahead of Florida orange juice in vitamin C, the scurvy-preventing factor in which the fruit is so abundant, in a two-year series of tests recently completed.

This discovery is in line with current announcement by the bureau of home economics, U. S. department of agriculture, which found the juice of California navel oranges richer than that of other varieties; also that orange juice is two or three times richer than tomato juice in vitamin C.

Mr. Lorenz also told the chemists that to "get the most" out of an orange—the richest possible juice, that is—it must be "reamed," not merely squeezed, just to the albedo, or white layer of skin.

This research covered the two-year navel orange production periods beginning in the fall of 1934 and continuing through the spring of 1936. Tests were conducted in laboratories in New York, Philadelphia and Chicago, supplemented with tests on California oranges at home. All laboratories employed the same method of vitamin C determination—a new chemical method of modified iodine titration developed by Exchange laboratories to replace the long and expensive animal feeding tests.

Had it been necessary to employ animal feeding tests instead of chemical determinations, the survey would have required the use of 168,260 guinea pigs instead of a few chemical reagents, as well as the juice of 14,000 oranges in lots of 12 boxes weekly. Agreement between the various laboratories was within one per cent, which speaks well for the accuracy of the research chemists as well as methods employed.

The two-year average vitamin C content of California navel oranges expressed in milligrams of ascorbic acid (vitamin C) per cubic centimeter of juice was .60, while those of Florida averaged .49 milligrams—a difference of 22 per cent in favor of California navel oranges. Uniformity of results in the University of California laboratories at Los Angeles, with those obtained in eastern cities, indicates vitamin C is remarkably stable in oranges.

New Refrigeration Rates In Effect September 10

The refrigeration charges for citrus fruit prescribed by the Interstate Commerce Commission are not affected by the injunction proceedings brought in the federal court against the commission's order by shippers of perishable products other than fruits and vegetables, such as meats, packinghouse products, dairy products and beverages.

The commission's decision required reductions in most of the refrigeration charges for fruits and vegetables from California and Arizona but authorized substantial increases in the refrigeration charges in all parts of the country on perishable products other than fruits and vegetables. When the shippers, whose charges were so increased, sought an injunction against the increased rates, the carriers countered with a proposal that the reduced charges on fruits and vegetables likewise be withdrawn. The injunction order entered, however, relates only to the charges on products other than fruits and vegetables, and the reduced rates prescribed on California and Arizona fruits and vegetables are now in effect.

These reduced rates are the result of an investigation instituted by the commission on its own motion, which has been in progress continuously during the past eight years. When the investigation was instituted in 1928, most fruits and vegetables from California and Arizona were moved under what is known as standard refrigeration, which involves icing of the cars at each carrier icing station en route. The only modified services that were available were those permitting initial icing by the shipper or carrier, with or without precooling, without any reicing in transit.

During the progress of the Commission's investigation, the California Fruit Growers Exchange in cooperating with the carriers furnished fruit for 37 test trains from California direct to New York in order to develop new and practical methods of refrigeration adapted to the citrus industry. The results of these tests showed that modified types of refrigeration were practical and economical. Through subsequent negotiations the shippers secured concessions from the carriers in the form of additional modified types of refrigeration, including the services permitting one reicing in transit and replenishing. The carriers were also induced to make substantial reductions in charges for furnishing ice at icing stations in Calif. and Arizona.

Comparing the rates now in effect as a result of the commission's decision with those in effect in 1928, when the commission instituted its investigation, the saving to California and Arizona citrus shippers based on the 1934-35 movement is estimated at \$875,000. The major part of this benefit, however, had already been realized by shippers as a result of the concessions made by the carriers during the progress of the investigation.

Advertisement for 'Lemon Recipe Revue' featuring five recipes: 1. Lemon Meringue Pie, 2. Lemon Curd, 3. Lemon Sorbet, 4. Lemon Ice Cream, 5. Lemon Sherbet. Includes images of the recipes and promotional text for Sunkist Lemons.

Seasonal lemon uses called to the attention of over 3,000,000 readers on the back cover of this week's Saturday Evening Post.

Exchange Lemons Exported to England in September

The Exchange took full advantage of an unusual opportunity to sell lemons in Great Britain this month. Due to financial exchange difficulties between Italy and England, the British market was bare, and 25 carloads of small sized fruit were diverted via fast ships from New York and Montreal from September 10 to 19.

In addition to the 10,000 metric tons previously granted, the French government on September 12 accorded the United States a special quota of 36,000 metric quintals of oranges. This is the equivalent of approximately 102,000 California boxes.

Good Test for Determining Maturity of Citrus Fruit

Chairman L. P. Kirkland of the Florida citrus commission has his own way of testing the ripeness of grapefruit and urges other citrus men to do likewise, according to a recent interview in the Tampa Tribune.

"Serve some of your own fruit to your own wives and children," he declared. "If they eat it and like it, then ship it. But, if they don't, don't ship it."

"This morning," Kirkland added, "I put some of my fruit before my children. But I couldn't force them to eat it, and they are all fond of grapefruit."

FIVE YEAR COMPARATIVE CITRUS SHIPMENTS

Table showing citrus shipment data from November 1 to end of August for Oranges, Grapefruit, and Lemons across various states (California, Arizona, Florida, Texas, Ala., La., Puerto Rico, Cuba) for the years 1932-1936.

The Sunkist Courier

DEPARTMENT

Compiled in the Offices of the California Fruit Growers Exchange and Published by Authority of the Board of Directors.

All communications for this Department or upon any subject relating to the Exchange should be addressed to the Editor, Box 5030, Metropolitan Station, Los Angeles. Letters from our growers are always welcomed.

Cooperative Leaders For the Future

Nothing is more important to the future of cooperative marketing than to have properly trained leaders, and it is therefore very encouraging to see some headway being made in teaching the subject in this country.

Urging farm boys who attend agricultural colleges this year to study farm cooperation, Gov. W. I. Myers of the Farm Credit Administration points out that courses in agricultural cooperation will be taught this year in at least 45 out of 48 state colleges and universities.

"A record number of courses in cooperative marketing and business cooperation are being taught this year, and students enrolling in these courses will participate in what is perhaps the most extensive organized effort for education in agricultural cooperation that this or any other country has ever known," Governor Myers said.

"Built up through 20 years of patient scientific study and field work, courses in agricultural cooperation now being taught in state agricultural colleges and universities include standard training in cooperative marketing and purchasing, accounting methods, history of cooperation, and study of management problems and agricultural business cooperation in general. These classes and laboratories of cooperative technique are taught by men who are not only experts but leaders in American agriculture.

"For farmers," the Farm Credit Governor declared, "cooperation is not an idea or a nostrum but a means by which individual farmers, working together in marketing or purchasing, can do a more effective and a more profitable farming business. Cooperative marketing of farm products and purchasing of supplies amount to hundreds of millions of dollars annually. The cooperative credit system under supervision of the Farm Credit Administration embraces nearly a million voting farmer-stockholders. That American agriculture is committed to the policy of cooperative development is indicated not only by this tremendous business and membership but also because the training of future farm leaders in our agricultural colleges includes the study of sound cooperative practices.

"In spite of the many difficulties which have confronted the 70-year-old farmer-cooperative movement in this country, the sales of farm commodities through cooperative associations during the recent marketing season aggregated nearly two billion dollars, and the purchasing of farm supplies by cooperatives primarily engaged in that activity amounted to 250 million dollars, the highest amount on record. Over 12,000 marketing and purchasing associations have a membership of over two million farmers who are unquestionably doing a better job of selling their crops and buying their supplies because of their organized effort.

"For reasons of business efficiency at least, it should be the ambition of every farm boy who has the advantage of an education to study and equip himself not only for the technique of cooperation, but equip himself also for leadership in cooperative agricultural development."



He Should Go the Full Way

The story of cooperatives is much the same in all commodities the world over. Their beginnings, usually humble, were made necessary by the fact that farmers, unorganized, were easily exploited. With organization came all the problems that came when men little used to large-scale business begin the battle with entrenched privilege. As handling margins grow narrower, brought about by the cooperative, it becomes more difficult for the co-op to make the showing it once did. It must then rely on an informed membership and loyalty if the cooperative institution is not to break down. The cooperative testing time comes when many of the problems that called it into being have been solved. But what other alternative is left to the farmer? If he quits his cooperative cold, he can look for the day of wide margins and all the old abuses to return again. That is true in any commodity he may be marketing through his own organization. For that reason he should support as many types of cooperatives as he has types of products to market. He should go the full way.—*The Co-op Reporter.*

The Manager Makes His Report

By E. A. STOKDYK

(What to present to his board varies widely, but there are some points that are common to the problems of all associations.)

What points should a manager cover in his report to the board of directors? What should he omit? How detailed should the report be? What matters should be presented for the board's decision? These are some of the questions one manager asks of another and aims to answer when he hears or reads the report of another manager.

The character of a manager's report will vary widely, of course, from one association to another depending upon the commodity handled, the size and type of the organization, and the competitive situation in the territory in which the cooperative operates. The following outline must therefore be general; yet, the points covered are those which are common to the problems of all associations.

Sequence May Differ Widely

The order in which the various items are considered is immaterial. Some associations prefer to consider financial reports first while others consider them last. One manager who reviewed these statements stresses the market outlook and prevailing prices and does so at the end of the meeting. In the larger organizations the department heads usually give reports on the work of their departments; whereas, in small associations the manager covers all phases of operations.

1. A report on operations since the last meeting of the board or since the last operating statement was prepared is an item of major importance. The relation between income and expenses, if records are kept in such a manner, is reported. If no calculation is made of income but records kept on a budget basis, then the relation between actual and the budgeted expense is stated. Where both are available, both are presented.

2. The physical volume handled and the prices received for products and the prices paid for supplies are usually reported. Where records are available, the foregoing items are compared with the records of previous periods, such as the previous year, the previous month, or both. Some boards of directors have adopted the policy of not asking for detailed reports on inventories or current price quotations for the reason that some members might inadvertently discuss such reports with someone who would convey this information to competitors to the detriment of the association.

3. A financial statement is usually presented. Current assets, current liabilities, reserves, and net worth are analyzed. Accounts receivable are frequently analyzed in detail; that is, by age and size with the view that sound credit policies may be adopted. Associations that revolve or rotate their capital scrutinize their net worth, together with the operating budgets and statements, to determine

if the organization is in a position to revolve a portion of its capital.

4. The manager may next present to the board for its consideration the disposal to be made of earnings or losses. If earnings or overages are available, shall they be distributed as patronage refunds, credited to reserves, or evidenced to members as membership capital? This is done in accordance with the provisions of the by-laws and contracts of the association and the financial needs of the association. If losses are incurred, the disposal of the losses is considered. At the same time, ways and means of avoiding further losses are analyzed.

5. The manager frequently reviews the operating budget and advises the board whether or not it should be revised. At the same time, he reports whether funds will need to be borrowed and if so in what amount and for what periods. If the board agrees, it passes the necessary resolution for borrowing and decides from which agency it will seek credit.

6. Questions of policy are submitted to the board's action. Such questions cover a wide range of subjects. Frequently, committees of the board take them into consideration for considerable periods and report their views to the entire board. Such questions include whether or not to: (a) Change the pooling methods; (b) change sales connections or utilize new trade channels; (c) advertise the products handled and amount to expend; (d) joining other agencies in industry programs; (e) contribute to trade organizations; (f) make advance payments to members and to what extent; (g) expand the facilities of the organization; and (h) handle additional products or fewer products.

7. Changes in membership are usually reported at each meeting, and applications for membership submitted for acceptance or rejection.

8. Any legal action on the part of the association or against the association is analyzed and the course of action to be taken determined.

9. A summary of crops and market prospects for the products handled or the supplies purchased is usually given by the managers some time during the board meeting. Directors' observations, too, are usually reported. Some boards devote a portion of their meetings to the discussion of timely problems or topics. The point or points to be discussed are announced in advance to the meeting and sometimes a committee of the board prepares an outline of the subject to be covered.

10. Finally, communications and items of general interest are reported.—From "News for Farmer Cooperatives."

1 1 1 1

A good thing to remember, And a better thing to do, Is to work with the construction gang And not with the wrecking crew.

Growth and Water Losses in Citrus As Affected by Soil Temperature

By A. R. C. Haas, University of California, Riverside, Calif.

THE growth of rooted leafy-twig cuttings of Valencia orange was studied in the soil temperature tanks in the glasshouse of the department of plant pathology from Feb. 8 to June 7, 1935. A rich sandy loam soil was brought to a suitable water content, then was thoroughly mixed and was uniformly com-

which time it was not possible to hold the lowest temperature at 19 and it was thereafter held at 20 degrees C. The air temperature was subject to the daily fluctuations in the weather and was that of the glasshouse. At any given time the air temperature was the same for all of the cuttings. During the experimental period the

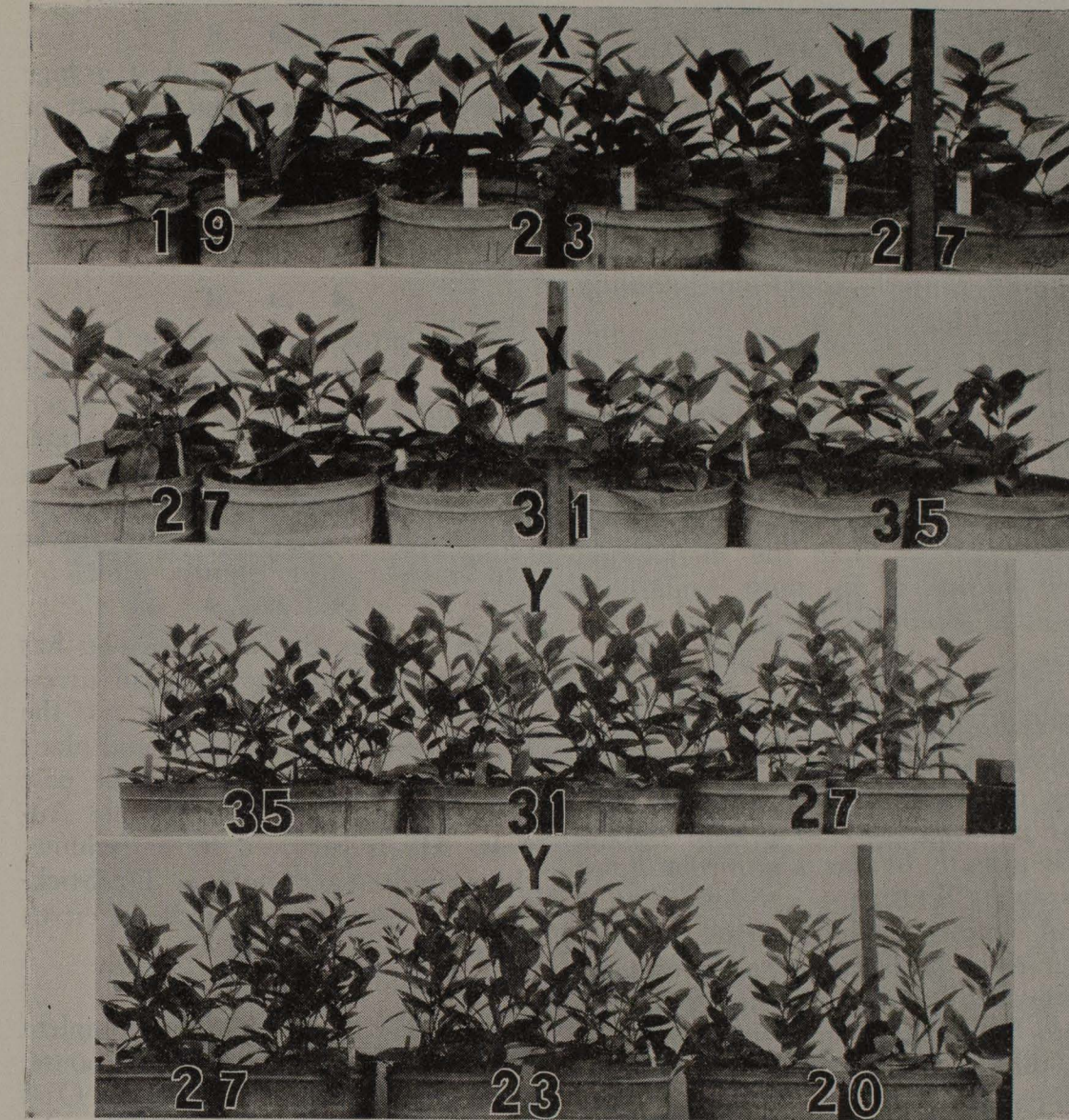


Fig. 1—Effect of various maintained soil temperatures on the growth of Valencia orange cuttings in soil cultures at various temperatures: X, Cuttings grown from Feb. 8 to April 20, 1935; Y, Same cuttings as X, but grown until June 7, 1935.

pacted about four cuttings in each of 20 containers. Approximately nine kilograms of moist soil was used in each container.

The soil temperature tanks were maintained at the following tempera-

mean weekly air temperature in the glasshouse ranged from 25.5 to 28.7 degrees C.

Fig. 1 shows the growth obtained at the various temperatures. Only at the lowest and highest temperatures,

TABLE I—Fresh and Dry Weights of Valencia Orange Cuttings Grown at Various Soil Temperatures (C degrees) from February 8 to June 7, 1935.

Portion of Cuttings	Fresh weight (grams)					Dry weight (grams)				
	Degrees Centigrade									
	19	23	27	31	35	19	23	27	31	35
New growth of tops.....	62.6	105.0	96.6	106.6	76.2	15.7	30.6	30.5	33.0	22.2
Original leaves of cuttings.....	41.1	37.2	36.0	37.1	30.4	17.7	15.6	15.0	15.8	12.9
Original twigs of cuttings.....	11.0	13.8	17.9	17.0	16.7	4.3	5.8	7.9	7.4	7.0
Roots.....	75.2	93.7	106.7	107.2	78.5	14.0	18.6	22.2	24.1	18.6
Total.....	189.9	249.7	257.2	267.9	201.8	51.7	70.6	75.6	80.3	60.7

tures; 19, 23, 27, 31 and 35 degrees Centigrade.

The variations did not exceed 1 degree C until about April 20, at

was there any difference apparent in the growth.

Table 1 shows that at the lowest degree C until about April 20, at

Continued on Page 479



As Ye Fertilize



So Shall Ye Reap

FALL fertilization is the finest basis for successful spring crops. The balanced diet in Gaviota COMPLETE fertilizers supplies all the plant food elements which the trees need to store up in their root systems for vigorous, healthy growth and big, solid, high quality fruit. Trees grow like people—steadily and gradually. Keep the elements they need for growth and production ready for them in the soil.

For more than 45 seasons, Gaviota has been gathering experience and scientific knowledge about California soil conditions and problems.

Gaviota field men are ready at all times to assist you with your specific problem. There is a GAVIOTA FERTILIZER exactly suited to the conditions in your grove.



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PACIFIC GUANO COMPANY

718 Central Bldg. : Los Angeles, Calif.

2nd at Hearst Ave. : Berkeley, Calif.

News of Interest to Citrus Growers

Orange washing, drying and polishing machinery is being installed in the Alta Loma Citrus Association packing house at Alta Loma by the Citrus Machinery Co.

The Sept. 1 fruit measurements carried on by the Association Laboratories at Anaheim since 1924 show that, with the exception of 1928 and 1933, the sizes of both inside and outside fruits of the Valencia variety are the smallest recorded.

A strong effort is being made by leading citrus growers of Texas to get all shippers to withhold shipments of grapefruit or oranges from that state until Oct. 1. The contention is made that through the shipment of immature fruit in other seasons the price level has been broken for good fruit later.

Further meetings for discussion of fall irrigation, fertilization, cover cropping and weed control have been scheduled by Farm Advisor Rounds in Los Angeles county. They are as follows: No. Whittier Hts., Sept. 22, 1:30 p.m.; San Dimas-La Verne and San Fernando Hts., Sept. 24, 1:30 p.m.; and Canoga Park-Chatsworth, Sept. 24, 9 a.m.

Citrus growers in one section of Australia have experienced serious damage recently when the flying fox suddenly developed a liking for citrus fruit, and swooped down on the orchards in thousands, according to the *Citrus News*, Melbourne. As these huge bats visit the orchards only at night time, very little can be done to check them, it is said. Explanation of the incursions is the dearth of natural blossom in the bush, on which the flying fox usually feeds.

The American Fruit Growers Inc., which is the outgrowth of the firm of Crutchfield & Woolfork formed at Pittsburgh, Pa., in 1896, has been celebrating its fortieth anniversary. H. S. Hazeltine is chairman of the board of directors of the California branch of the organization and O. W. Schleussner is president of the division located in this state. Both Messrs. Crutchfield and Woolfork are still actively engaged in the affairs of the company in the east.

The federal-state crop reporting service estimates the forthcoming crop of California navel and miscellaneous oranges as 77% of a full crop as against 73% at same date a year ago; lemons 75% as against 67% a year ago; grapefruit at 73% against 76% a year ago. Next year's crop of Valencias is estimated at one per cent greater than for the year just closing. Florida, it is estimated, will have a greatly increased volume of both grapefruit and oranges. Texas crop of grapefruit is forecast at more than double that of last year.

Arizona Citrus Growers at Phoenix is having new grapefruit washing, drying and polishing equipment installed in its packing plant.

Although warm weather has caused a slight drop of small lemon fruit, prospects are that Santa Barbara will have a good setting of summer fruit for next year, says Eugene Kellogg, agricultural commissioner.

A. D. Shamel, physiologist, U. S. department of agriculture, located at Riverside, with Mrs. Shamel is taking a long desired trip to Mexico. While in Mexico Mr. Shamel plans to make a study of some of the plant life in which he is so intensely interested.

The 60 acre Goldman citrus ranch west of Lindsay has been purchased by E. W. Killian of Berkeley, who already owns citrus property near Exeter. He will soon move onto the newly acquired property. Mr. and Mrs. E. K. Walls, who have been occupying the house on the Goldman ranch, will remove to the Porter citrus property on the Tulare highway.

Friends of Dr. Herbert J. Webber, former director of the Citrus Experiment Station, Riverside, will sincerely regret to learn of the sudden death of Mrs. Webber which occurred while she was on a visit recently at Berkeley. Dr. and Mrs. Webber were almost inseparable companions and most congenial in their tastes. Mrs. Webber was keenly interested in the doctor's research work and had much ability as an illustrator.

In addressing the Upland Lions club at a recent gathering, H. S. Bailey, manager of the Exchange Orange Products Co., of Ontario, asserted that while there is a useful oil in lemon seeds, there are not enough lemon seeds available to make it commercially practical to collect, dry and process them. Experiments made have shown that lemon seed oil is not sufficiently valuable to justify the attempt to convert the seeds into an oil.

Another exploration in search of natural enemies of the black and red scales will be undertaken shortly by Harold Compere, research entomologist for the University of California. Mr. Compere is to leave Oct. 1 from New York, bound for South Africa. The expense is to be borne jointly by the citrus industry and the university, the latter paying Mr. Compere's salary and the growers the other expenses. Two years ago a similar search was made in South America and Mexico which resulted in some parasitic pests of value, although none was discovered which could be used for control of the red scale in California.

Estimates of next season's citrus crop in Los Angeles county range from 50% of a crop to better than normal, says Harold J. Ryan, agricultural commissioner. Some splitting of navels is noted, he adds.

In order that it may be closer to the base of operations of the Florida Citrus Commission, which has its offices at Lakeland, the Florida state market news station has been removed from Orlando to Lakeland.

In anticipation of the navel orange harvest which will start in a few weeks, the Richgrove-Jasmine Citrus Association at Richgrove is installing new packing machinery in its house at Richgrove. New purchases include a washer, dryer and grading equipment.

The Strathmore Packing House Co. is installing new dumping, washing and polishing equipment furnished by the Paxton Nailing Machine Co. House Manager Edwin Kroells states that the installation will be one of the most modern in Central California.

Charles A. Butler, manager of the Chula Vista Citrus Association, was the chief speaker at a recent meeting of the La Mesa Rotarian club. He gave an interesting talk, tracing the growth of the California Fruit Growers Exchange and of what it had done to establish citrus fruits as the most healthful of all fruits for human consumption through its research, merchandising and advertising methods.

Several citrus subjects were on the program for discussion at the meeting of the Entomological Club of Southern California at Alhambra, Sept. 18. D. L. Lindgren was scheduled to discuss fumigation studies on red scale; W. E. Landon was to speak on control of citrus thrips on lemons. The work of the state structural pest control board was to be told by M. G. Jorgenson and some common spray faults and suggested remedies were to be given by Roy E. Mason.

In the *Pacific Coast Packer* recently there was printed the story of a 1300 mile mid-summer hike taken by Willis Ocker of Redding, Calif. The trip included the walk through Death Valley with sun temperatures of 165 degrees. His noonday meal comprised only orange juice. By weight orange juice supplied 50% of the total food consumed by Ocker on the entire tour. The orange juice consumed by him was supplied by the American Fruit Growers Inc. The *Packer* quotes Ocker as saying that he eats oranges for strength and endurance and that the orange tree is the nearest thing to the fountain of youth ever discovered.

A San Pedro newspaper prints the picture of Mrs. Mary Russell of that place holding a lemon which she grew there and which weighed a pound and five ounces and measured 13½ inches in circumference.

The precooling plant of the Charter Oak Citrus Association was completed in time for use on the late picks of fruit in that house, says Wilburn Smith, manager. He reports that it is very satisfactory in every way.


Stephen P. Moore, Sunkist orange grower of Glendora and resident of Southern California for the past 30 years, died at his home in Glendora in early September. Mr. Moore was a member of the Azusa Citrus Association.

Many groves in the area in Orange county struck by heavy winds last fall have a very poor setting of green fruit for next season, reports state. The crop is generally reported as being from fair to very good with considerable variation as to groves and location in the county.

Dr. Fenner S. Stickney, who has been engaged in entomological investigations at the laboratory of the U. S. bureau of entomology and plant quarantine at Whittier for the past seven years, passed away in mid August. He is survived by his widow, three children and mother. Dr. Stickney specialized in research on citrus insect pests.

As a second step in the complete modernization of its packing house, the Ojai Orange Association at Ojai has recently ordered installation by the Citrus Machinery Co. of new sizing equipment. The packed box conveyors have also been reconditioned and an accumulator installed at the box press. Last spring the association put in a new washing unit and new grading tables.

The 36th anniversary of the San Dimas Orange Association was celebrated on August 27. The association, then known as the San Dimas Citrus Union, was incorporated in 1900 to handle both oranges and lemons. In December, 1910, the entire plant, which was full of oranges and lemons at the time, burned to the ground, and upon reorganizing the oranges and lemons were separated into two separate associations. In its 36 years, the association has had only four managers, the first was C. D. Drum, being succeeded in 1904 by James E. Drummond. In 1910, the late E. M. Wheeler became manager and served for 22 years until his retirement in 1932. Since then the manager has been C. A. Nelson. An interesting account of the association's history, written by W. A. Johnstone, was published in the *San Dimas Press* for August 27.



THE FILM OF DEATH

FOR RED AND BLACK SCALE

BALFOUR SOLUBLE—or emulsible—oils provide a tougher, longer-lasting, more lethal film, destructive to red or black scale. Because of the reduced absorptive qualities of the light oils used, Balfour Solubles provide controlled penetration on plant surfaces. The actual physical properties of the oils themselves are changed by the solutes they contain. Free-flowing and easy to handle, they contain from 18% to 20% more active ingredients than paste emulsions. Toxics and fungicides in these perfect carriers provide all-round pest control at single spraying. Lighter dosage, better spread, controlled penetration, greater economy, increased efficiency—these are the advantages of pest control by means of Balfour, Guthrie Solubles—the Film of Death.

Balfour, Guthrie & Co. Limited, manufacture a full line of Oil Sprays, to meet every requirement of scientific pest control. Balfour, Guthrie field representatives and entomologists are always available to consult with you about specific problems. Their impartial advice about means and methods can be relied upon implicitly.

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EVEN • CONTINUOUS • PERSISTENT

For full information about these **DEPENDABLE** products, see our field representatives, or write Paul R. Jones, Entomologist, in care of

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Early Records of Citrus

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from the walls of the Waite home, provides interesting reading.

There are many references to "Palm Valley," which is the name under which what we now know as "Palm Springs" was then designated.

Land values of bearing and non-bearing orange groves are given in one of the advertisements reproduced in one of the cuts herewith.

While this reference has nothing

to do with citrus growing, there was an item in one of those early copies of the *Riverside Press* which told of a new religious sect which had been proposed by a man in southern California which put an entirely new aspect on "hell" from that generally entertained as orthodox. This man was, according to the article in question, trying to induce people to leave California and go to Dakota. Quoting from the *Press* article: "Instead of the place where the doomed sinner fries on the coals and drinks melted lead throughout eternity, 'Prophet Homer' tells his hearers of four places where, dressed in nothing more sub-

stantial or close fitting than a linen Mother Hubbard, the lost are subjected to temperatures ranging as low as 300 degrees below zero and lower." But getting back to citrus: That the elder Waite laid the foundation well is evidenced by the thrifty ap-



The second home of the Waite family in process of demolition to make way for more modern place of abode.

owner, Howard Waite, and were exhibited to the writer.

When the senior Waite took the property over it was planted to barley. Soon grapes and oranges were set out. As the orange industry grew in importance and it became apparent that Riverside was particularly well adapted to citrus growing, the entire 20 acres were planted to oranges, almost entirely of the Washington navel variety.

Since that time Howard Waite has added 20 acres more to the planting. There are today 40 acres in the holding.

In the chat which the writer had



The new home of H. E. Waite, erected on the exact site of the former two, and just before the family moved in. Mr. Waite standing in center foreground.

with Mr. Waite, scarcely a word was said about the cultural care which is being given the grove and what is being done for it today by him. But it was scarcely necessary to make any comment for the condition of the trees and the general appearance of

the grove spoke for themselves. There was every evidence of excellent care on the part of the owner. There is nothing observable about the trees which would indicate any-

board of directors of the Riverside Heights Orange Growers Association of which C. N. Funk is manager.

Not long ago Howard Waite expressed himself to another Exchange

grower as feeling that growers would be much better off in every way in the long run if they would devote their chief attention to improving the quality of the fruit they raise and leave the intricate marketing problem to a well managed association, district and central Exchange. In that way they would best serve their own interests and those of the industry as

Continued on Page 478

URSERY PLANTING.
We have the finest stock, both in quantity and quality of Washington Navel and other convenient points. We shall spare no pains to deliver under our usual conditions in February, March and April, 1908.

TWOGOOD & CUTLER, RIVERSIDE, CALIFORNIA.

Good in Navel Orange Trees.

Genuine RIVERSIDE WASHINGTON Navel

These reliable trees have hitherto been known in Florida as the **WASH. NAVEL**, but are now known to others under our name of **WASH. NAVEL**. To prove they are good, the stock and their price are constantly applying to us for facts of the matter. We have the following testimonials from a reliable Florida nurseryman, who is well known in the citrus world: "I know of parties who have cut many (over thousands) of buds from the old Florida Navel and set them on purpose to send to California as the **WASH. NAVEL**. The stock (and) Washington Navel" "I have also a beautiful lot of buds from Washington Navel sent to us direct from Washington." "We have the Navel, Florida's Navel, known as the **WASH. NAVEL**. Almost all the stock sent to us for sale is of this variety. We are willing to see them for about one-half the price of our **WASH. NAVELS**."

WASH. NAVELS.
The buds of the latter variety are of the best and are the best and one of the best varieties of all oranges. California has not the opportunity to use of her own produce such as Florida varieties of the Navel have failed to compete successfully. If we have one such tree as this in our grove for that purpose. Florida would be glad to ship such trees to us for that purpose.

TWOGOOD & CUTLER, FROST & BURDESS.

RIVERSIDE : NURSERY.

SWEET OR SOUR STOCK.
You pay your money and take your choice.

We have a few trees left but they are going fast. 4000 sold in one order yesterday for the M. C. B. The finest lot of **SWEET SEEDLINGS** ever offered to the public and for the present a **FULL LINE OF BUDS**, true to name and guaranteed as good as can be grown here or elsewhere. Our stock will be rightly examined by the Committee on Fruit/Pests before delivery. Our interests in Riverside are too large to endanger them for any profit we might make on Nursery Stock. Sample Trees may be seen and Orders given at Messrs. Van de Grint, Combs & Dice; Russell, Noland & Russell; or E. A. Miller's.

BOYD & DEVINE,
:: WAREHOUSEMEN, ::
Commission Merchants and Wholesale Grocers.
Agents for J. B. White's and K. B. & S. Portland Cements.
AND DEALERS IN PLASTER, LIME, HAIR, ETC.
Our arrangements for supplying Farmers and Producers with Raisin Labels, Paper and Box Material are Unsurpassed.
Consignments of Honey, Dried Fruits, and California Products generally will receive prompt and careful attention.

A. J. & D. C. TWOGOOD,
WHOLESALE SHIPPERS OF
Oranges, Lemons, Raisins, AND DRIED FRUITS.
The Celebrated Carson Trays, Sweet Boxes and Raisin Boxes Ready for Delivery.
COR. PACHAPPA AVE AND SEVENTH STS.

Miscellaneous.

DOWN & ALGUIRE,
Pioneer Brick Works
Manufacturers and Contractors in all classes of
BRICK WORK, PLASTERING & MASONRY

Photostatic copy of portion of page of the *Riverside Press* of 1888, taken from a side wall of the old Waite home. Note the citrus advertising. They were discussing sweet and sour root stocks in those days, too.

thing but a record of continued good production over a long period of time.

Since 1900 the fruit from the Waite grove has been marketed consistently through the California Fruit Growers Exchange. The elder Waite was on the board of directors to 1914 and was an excellent cooperator. His son, Howard, has followed the principles laid down by his father. He is and has since 1922 been on the

grower as feeling that growers would be much better off in every way in the long run if they would devote their chief attention to improving the quality of the fruit they raise and leave the intricate marketing problem to a well managed association, district and central Exchange. In that way they would best serve their own interests and those of the industry as

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BRENNEIS

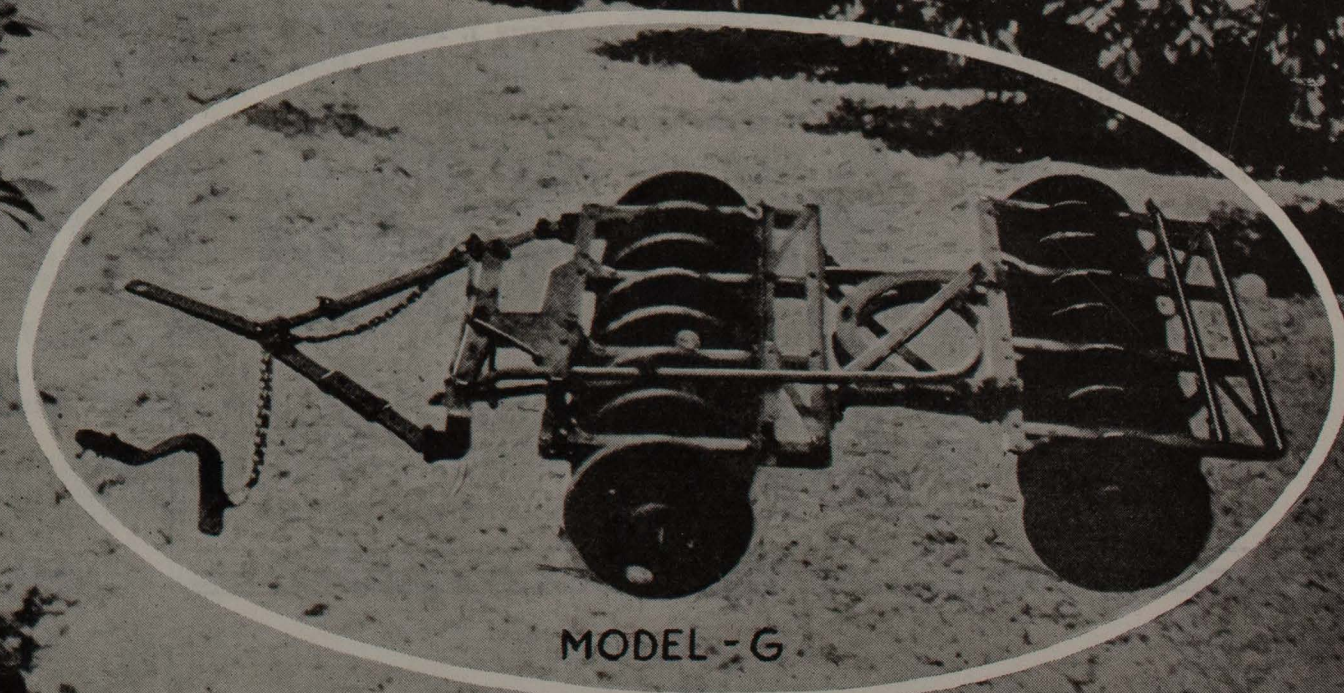
A LEADER AND PIONEER

Visit Our Display at the **L.A. County Fair**

See the Famous **BRENNEIS ORCHARD DISC HARROW**

It Costs Less to Own One Because of Its **STRENGTH & SIMPLICITY**

B. HAYMAN CO., Inc.
Since 1876
118-128 N. Los Angeles St.
Los Angeles California



MODEL - G

16 Years Ago-



● This citrus grower purchased his first Cletrac sixteen years ago. In 1935 he purchased his fourth Cletrac.

This grower is one of several thousand throughout the California citrus area who has learned—through actual experience—the economical and profit-making performance of Cletrac.



Write or phone the nearest Cletrac distributor listed below for literature, prices, etc., on Gas or Diesel models from 24.6 to 93 h.p.

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118-128 N. Los Angeles St.
Los Angeles, California</p> <p>May-Bemis Company
524 East 1st Street
Santa Ana, California</p> | <p>Charles Cooper
2170 Thompson Blvd.
Ventura, California</p> <p>Holly Sumner
649 Fourth Avenue
San Diego, Calif.</p> <p>R. A. Wheeler
3347 E. 8th Street
Riverside, California</p> <p>Harry J. Farason
558 W. Second Street
Pomona, California</p> | <p>Harry J. Farason
525 N. Citrus Avenue
Covina, California</p> <p>Edward Keasbey
234 S. Greenleaf Ave.
Whittier, California</p> <p>Valley Tractor Co.
424 Main St.
El Centro, California</p> |
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THE CLEVELAND TRACTOR COMPANY
CLEVELAND, OHIO

Cooperative Pest Control Benefits Told to Lemon Men's Club Members

PERSISTENT, concerted attacks on citrus insect pests, in areas wherein the scales have not become too generally widespread may result in the eradication of those pests. This was emphasized at the meeting of the Lemon Men's Club in the Sun-kist building, Los Angeles, Sept. 2. This was the first meeting of the fiscal year for the lemon men and was well attended. President H. W. Nixon presided.

The work and experiences of the Ventura County Citrus Protective League were outlined by A. C. Hardison, president of the Hardison Ranch Co. of Santa Paula. Mr. Hardison is one of the outstanding citrus and walnut growers of California and a national agricultural figure. He is constantly working for the betterment of the farmer and particularly of the groups in which he is primarily interested as a grower. His discussion was on "The Ventura Plan of Insect Eradication."

Mr. Hardison stated in opening that the purpose behind the formation of the Ventura County Citrus Protective League was the eradication of resistant scale pests which had not become generally distributed in the county. These were the red and purple scale, the black scale not being included because of its generally wide

distribution. The league was the outgrowth of a meeting held in Fillmore early in 1922 at which the eradication of red scale in the county was thoroughly discussed. It was the



A. C. Hardison

consensus of opinion of growers attending that meeting that they should act as a unit and undertake a planned

Continued on Page 474

ORCHARD BRAND *Quality*
... a sound basis for spraying for profitable results

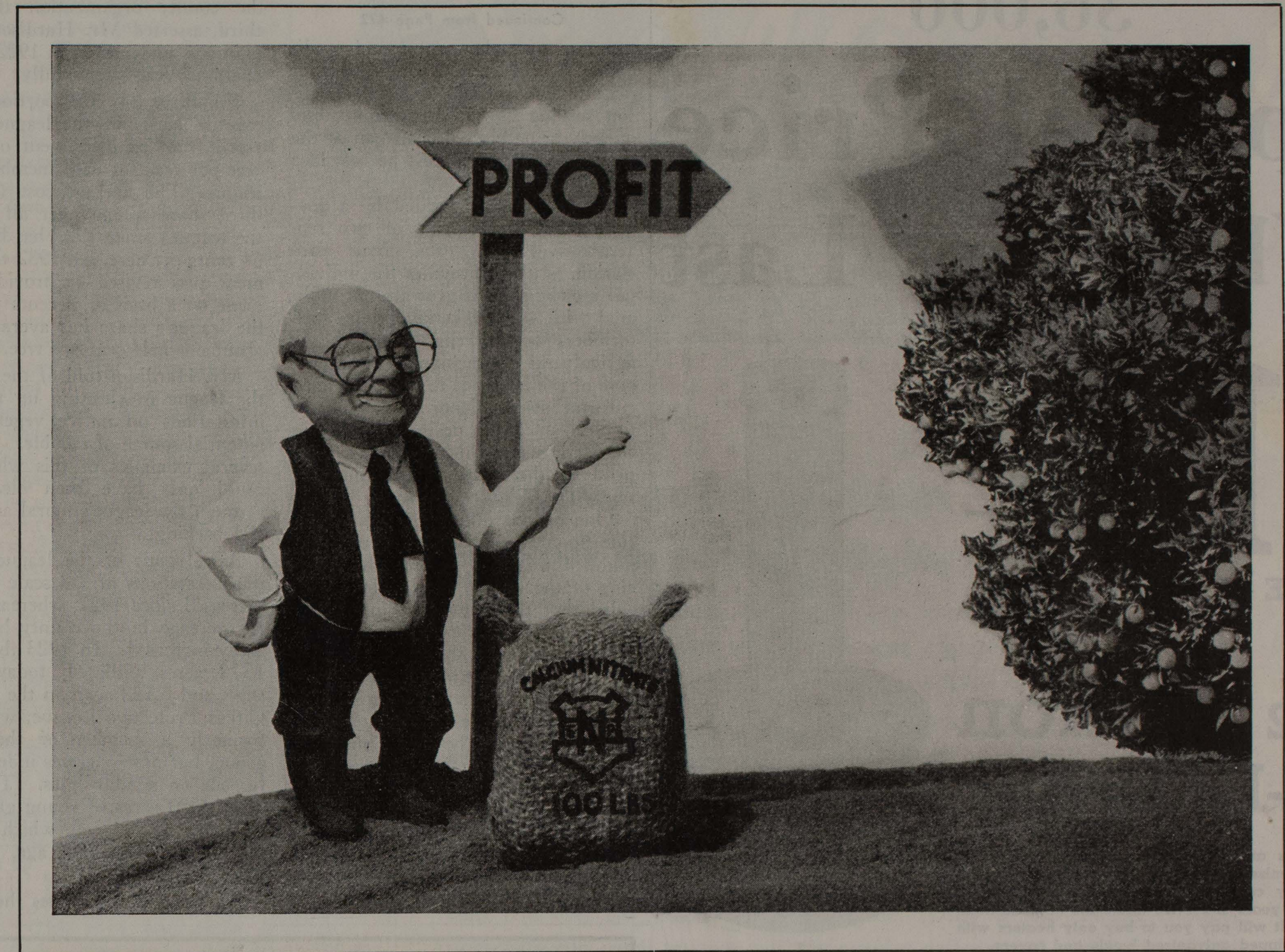
Scientific control, such as governs production in our chemical manufacturing plant, produces

LIME SULPHUR SOLUTION

of a uniform quality which makes the factory-standardized product a sound purchase. You know you get full 29% active Calcium Polysulphides... You know the Orchard Brand product will be sediment-free—and will not clog spray nozzles... Bulk shipment in tank cars is a further economy. Also in drums.

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Dry Lime Sulphur
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Veget-Aid Dust
"Astringent" Arsenate of Lead
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Calcium Arsenate
and other
Spray and Dust Materials



THE SIGNS POINT TO CALCIUM NITRATE

(NITRATE OF LIME)

Thousands of growers use Calcium Nitrate year after year. The proven results of this time-tested nitrogen fertilizer are reflected in their steadily increased profits, their vigorous, healthy, high producing groves, and the excellent condition of their soil.

For Calcium Nitrate, unexcelled source of quick acting nitrate nitrogen, also supplies water soluble calcium (lime) (equivalent to 1,000 lbs. of limestone per ton) without extra cost.

Calcium Nitrate has won its enviable reputation on its merits—by producing profitable crops, year after year.

Calcium Nitrate is easy to apply in any convenient manner. It checks soil acidity. It leaves no harmful residue. It improves soil conditions.

Shipments are now being booked for the new season. See your dealer and order now.

CALCIUM NITRATE

ANALYSIS • NITROGEN 15.5% MINIMUM COMBINED WITH 28% AVAILABLE LIME

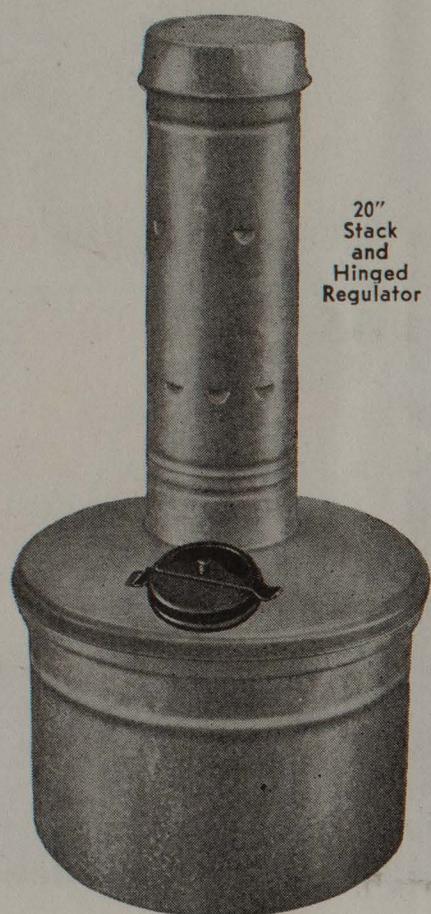
PACIFIC COAST DISTRIBUTORS **WILSON & GEO. MEYER & CO.** SAN FRANCISCO, CALIFORNIA

Growers requiring a slower, longer acting fertilizer, of similar high quality should ask their dealer for Cal-Nitro [Nitrogen 20.5% (half in nitrate form, half in ammonia form) combined with 32-35% available Lime and 7% Magnesium Oxide].

36,000 Special Price While they Last

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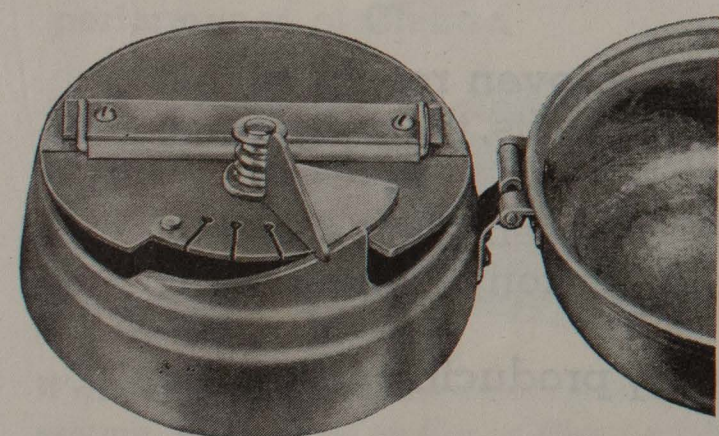
NOTE THESE FEATURES
OF THIS
**7½ Gallon
Hy-Lo Heater**



20" Stack and Hinged Regulator

1. Bowls and covers are made of black iron, galvanized by the Hot-Dipped process. The heavy coating of galvanizing which results adds years of service to the life of these heaters. It will pay you to buy only heaters with Hot-Dipped galvanized bowls and covers.
2. The round type of bowl is rigid and seamless. Capillary attraction is reduced to a minimum.
3. These HY-LO Heaters are safe, easy to light and simple to operate.
4. Economical to operate because oil consumption is readily controlled by hinged regulator. You burn only the amount of oil necessary for efficient heating under existing conditions.

HY-LO AUTOMATIC REGULATOR



MAKES
**ANY
HEATER**
"A ONE-MAN
HEATER"

Fits any heater. With this device, the heater is lighted by merely throwing back the hinged regulator plate and applying the torch in the regulator way. No follow-up man is necessary. With the HY-LO Automatic Regulators, you pay for them once, save with them always. Before you buy any orchard heater, investigate only those equipped with the HY-LO Automatic Regulator.

COMPLETE LINE OF HY-LO ORCHARD HEATERS AND REPLACEMENT PARTS AT UPLAND WAREHOUSE FOR PRACTICALLY EVERY ORCHARD HEATER NOW IN USE IN CALIFORNIA

ROUND - SQUARE - COKE HEATERS

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Cooperative Pest Control

Continued from Page 472

program of scale control and eradication. At a later meeting a plan of organization was set up, Mr. Hardison serving as chairman and subsequently being elected chairman of the county committee, a post he has since held.

The league is operated by a governing board consisting of two representatives from each citrus association. It also provides for individual membership of growers not affiliated with any marketing group, such members to be represented by the agricultural commissioner. The purpose of the league is to assist the agricultural commissioner in his efforts to clean up any scale infestations, for the vigor with which he may act depends on the backing of the industry, said Mr. Hardison.

One of the difficult things to decide upon when the league was formulated was how to plan the financing of the work. It was finally decided that the grower having an infestation on his property was primarily interested and should bear a portion of the burden; that the association of which that grower was a member was interested in having the grower clean up the scale; and that all growers in the county were interested in having the sources of scale infestations adequately treated. It was finally decided that the growers should bear directly one-third of the cost of treating his orchard, the association of which that grower is a

member should bear one-third, and the county organization the other third, asserted Mr. Hardison. That plan was undertaken in 1922 and has operated very successfully.

Funds to pay the portion of the expense borne by the league are derived from an assessment of \$1 per acre per year for each member of the league. The average cost (the one-third share spread over all acres in the league) since 1922 has been only 64 cents per acre. In 1932 the agreement was revised to provide assessment on a basis of 2 cents per tree; the league's share has averaged only about one-half cent per tree.

Mr. Hardison told of the work of the league in cleaning up red scale infestations on native vegetation—a potential source of trouble. He cited several examples of this where they could only have been cleaned up through the league's moral and financial backing.

As a result of the league's work, the infestations of red scale have not increased since 1922, whereas the citrus acreage in the county has materially increased. In 1923 there were 8338 acres affiliated, today 18,541 acres and 6,122 acres in the Fillmore Citrus Protective League, which was formerly a member of the county group, but now operates independently, but on similar lines. There are some 9250 acres of young groves unaffiliated as yet, but which will be when they become of age, which is three years.

The league determines the type of

treatment to be accorded the infested property, whether double or interval fumigation, or combination spray and fumigation. Unless the treatment given is approved by the league, the county group does not contribute to the cost. If one tree is found to be infested, the entire cultivated unit must be treated. No orchard may become a member of the league unless certified by the agricultural commissioner as being "clean" of scale.

Mr. Hardison answered many questions regarding the operation of the league which has been so successful in keeping in check one of the most ravishing pests of citrus trees.

The second speaker discussed the operation of a cooperative pest control organization. He was Ralph Moon, manager of the Cooperative Fumigation and Supply Co. of Upland. This organization was incorporated by a group of growers in the Upland-Ontario area in 1911. Mr. Moon stated that these growers foresaw the necessity for continued pest control and felt that savings could be made by operating a company cooperatively. In addition there would always be a dependable place established in the district that could meet the grower's need in pest control work.

Mr. Moon, in discussing the company's plan of organization and operation, said:

"Under the articles of incorporation, 50,000 shares of capital stock were set up. Some 26,000 have since been sold. Five shares per acre are required to a grower becoming a member. This stock was issued at \$1 per share. The money thus accumulated was used to buy the first equipment the company needed and also a place within which to operate. From the time of the purchase of the first equipment until the present, all equipment is depreciated each year and this money is kept in a fund with which new purchases and replacements may be made.

"A board of directors, elected by the stockholders, has charge of the policies of the company. It meets once a month and goes over the company's business with the manager.

"Although we do not care for all the groves in our district I feel that we are of some benefit to growers other than members, in that a cooperative concern of this type serves to stabilize the business and keep prices fairly uniform. I firmly believe, if this cooperative pest control company had not been set up, that the growers of our district would be paying far more for their control measures than they are now.

"In January of each year we close our books for the preceding year; they are checked by an auditor and the costs of operation are determined. The depreciation reserve is set aside and the balance or surplus is refunded to members according to the amount of work they had done. During 1935, we did \$105,000 worth of business and refunded between \$13,000 and \$14,000.

"We are now operating 11 spray rigs and five fumigating crews. We

Continued on Page 476

SHARP WITS



DICTATE THE USE OF
—ZINC—

FOR THE CONTROL OF
MOTTLE LEAF

Sharp Pencils

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AND
DEPENDABLE RESULTS
THE USE OF

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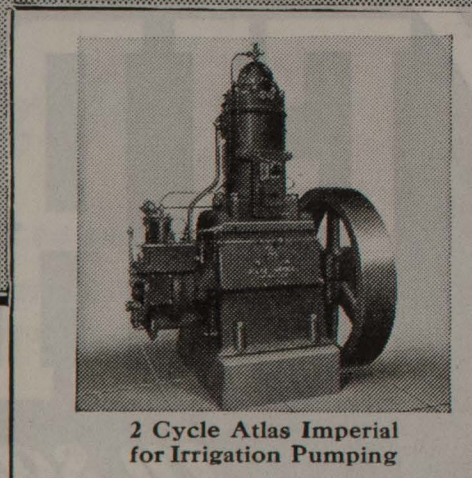
2717 So. Indiana Street

Los Angeles, Calif.

Diesel Answers

BY THE SHELL TECHNICAL STAFF

Have you any questions on Diesel operation?
Write Shell Technical Staff, Shell Oil Co., Shell Bldg.,
San Francisco. You will be answered promptly.



2 Cycle Atlas Imperial for Irrigation Pumping

Do radiators on Diesels differ from those on gasoline engines? ... P. B. McC.

A Diesel is more efficient and wastes less energy, thus it can be cooled with a smaller radiator than a gasoline engine of the same horsepower. In construction, the radiators are alike.

Does smoke show that a Diesel isn't working right? ... E. O. W.

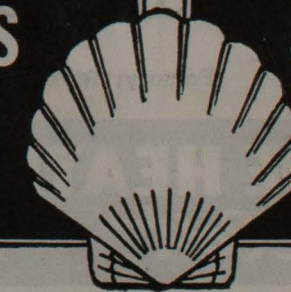
Yes, smoke usually means that the injection valves are worn or that the fuel isn't right for the engine. (Only a few Diesel models normally run with even a slightly smoky exhaust.) A carefully refined fuel like Shell Dieseline will help you avoid both valve and fuel troubles. Shell Dieseline burns completely. And this overhead-distilled fuel is free from grit particles and other injurious impurities that wear out injection systems. (See next question.)

What is the one biggest cause of wear? ... A. L. W.

Dirt, the thousands of tiny particles that get into a Diesel. Grit doesn't always come directly from the air; improperly refined fuels and oils may contain such impurities when delivered. Worse yet, clean products are often carelessly stored by the farmer where dust can get into them. It pays to buy clean fuel and oil and to see that they're kept clean. Shell Talpa Oils have been refined pure especially to meet Diesel lubricating needs. Operating records on farms all over the West show that these impurity-free, tough-filmed oils cut down engine wear, lengthen running time between overhauls.

SHELL TALPA OILS

Lubricate 3 out of 4
Diesels on western farms



SHELL DIESELINE

burns cleanly—at lower
upkeep cost per horsepower

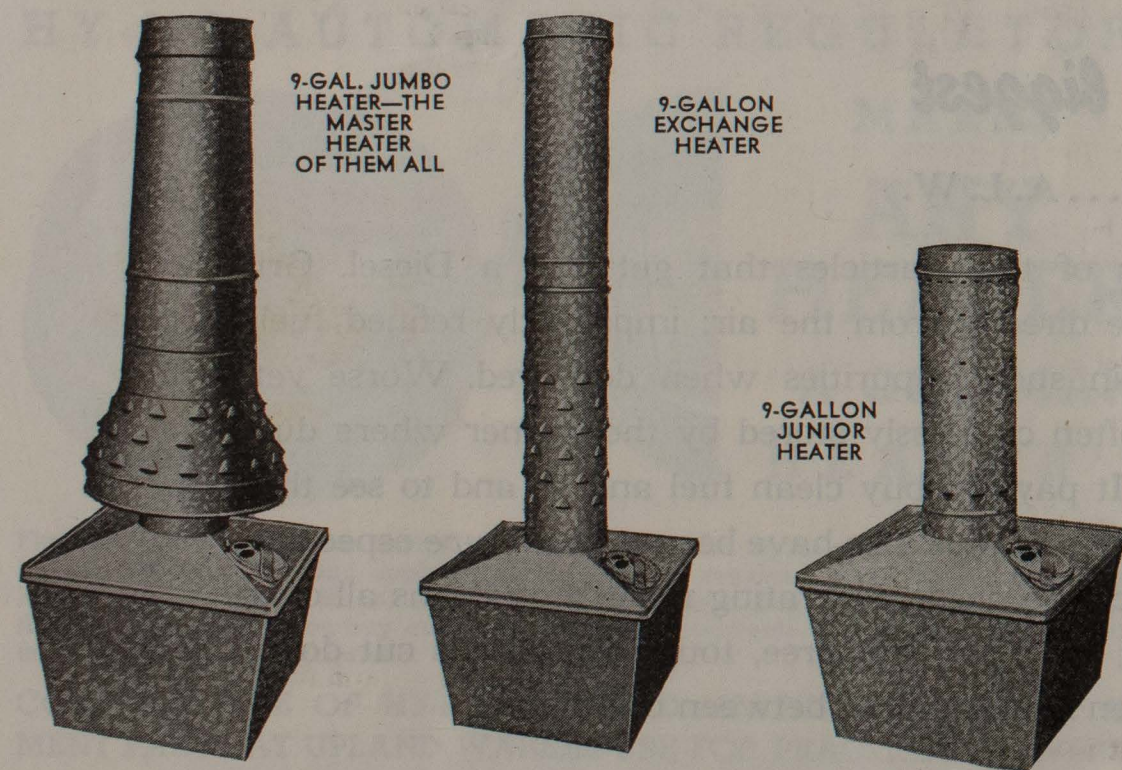
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*in sales
in service
in quality
in low price!*

National-Riverside Heater performance is the best evidence you can get of sound heater investment. Citrus crops worth millions of dollars have been saved by these heaters.

The results of 20 years of heater building are embodied in the perfected National-Riverside heaters of today. Moreover it is plain good sense for a heater buyer to ally himself with the company that for over 20 years has been the absolute leader in SERVICE, SALES, QUALITY and LOW PRICES.

Millions in use and thousands of satisfied users.

All National-Riverside Heaters are made from Galvanized Prime Sheets Copper Alloy Steel—the Finest Steel used in any heaters.



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National-Riverside Company
Manufacturers and Distributors

General Offices: Covina, Calif. Factory: Riverside, Calif.

NATIONAL-RIVERSIDE HEATERS
"Kill Frost at Little Cost"

Cooperative Pest Control

Continued from Page 475

maintain all equipment in good shape, as we believe it is good economy to keep it that way, rather than wait for breakdowns. During the past month we have sprayed 1200 acres and have not had an outfit in the shop during working hours. It has always been the policy of the company to have efficient equipment and to spare no expense in seeing that it remains so. We find this pays well.

"We have been able to keep our first cost of application to 60 cents per 100 gallons, for the past two years. Last year we refunded 7½ cents of this amount back to the growers. During 1935 we sprayed 3354 acres for scale, 600 for brown rot with zinc-bordo principally, 400 acres for mottle leaf and 200 for aphid and spider, a total of 4554 acres sprayed. Last year we fumigated only 750 acres, but have already passed that mark this year. We also dusted 450 acres last year, making a grand total of 5755 acres with some kind of treatment. There are 4500 acres represented in our membership."

In answer to a query, Mr. Moon stated that any questions of damage are handled by arbitration; that the company has been able to operate the past few years without borrowing working capital; and that the company is independent of any marketing association.

The advantages and disadvantages of the citrus association handling pest

control problems for its members were briefly outlined by Frank G. Webber, manager of the Sierra Madre-Lamanda Citrus Association of Lamanda Park. Mr. Webber



Fred H. Nusbickel
Vice-President, Lemon Men's Club
Photo by Boye Studios

stated that his association had been handling pest control for its members since 1908, now operating four strings of fumigation tents, two spray rigs and one duster.

Advantages of this type of operation, said Mr. Webber, are that by having their own entomologist, acquainted with all of the orchards

Continued on Page 478



KING DAVID

Here is an attractive and attention getting label with an appropriate title for the King of the Citrus Industry. This lug label was designed for the Associated Anaheim Growers by the creative department at WESTERN. The quiet dignity of the face and snowy white beard, makes it stand out among other products, while the strong display of the name makes it easily identified and remembered.

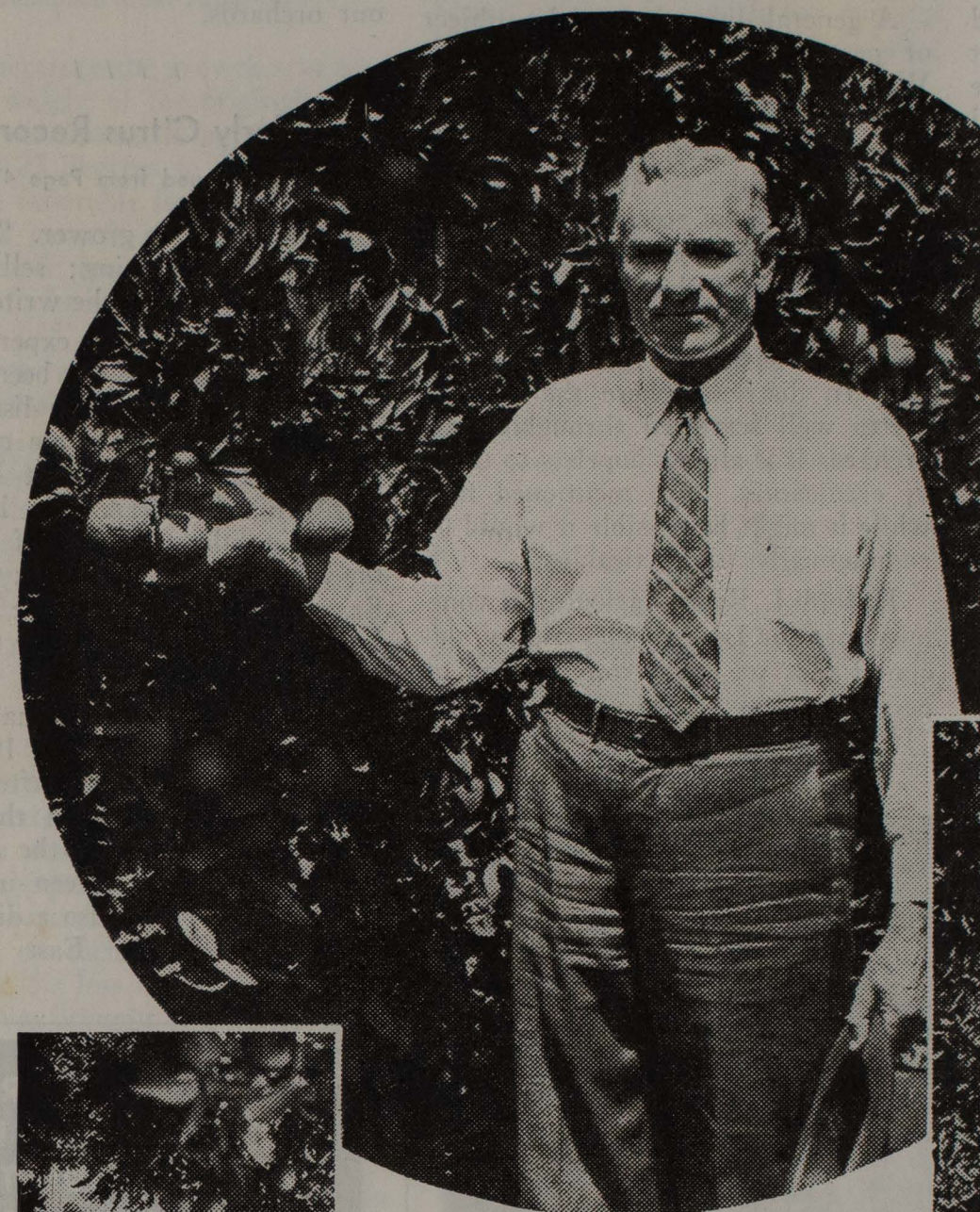
WESTERN has been working with the citrus industry for many years helping them build and create brands and labels that sell. Let us help you increase your sales with a smart new label. No obligation for a free estimate on your problem. Call us—TRinity 2641.

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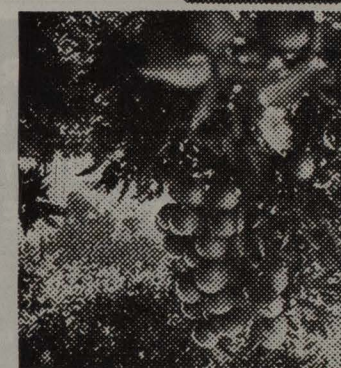
are working for me

Henry Pieper, orange rancher, is glad distribution system has changed since he "kept store," 17 years ago



10 ACRES SUPPORT HIM—Henry Pieper grows Valencia oranges on a small, intensively-cultivated ranch in Orange County, near Anaheim, California. Every year—except one season when prices touched bottom—he's shown a profit on his operation. He is a member of Mutual Orange Distributors.

His neighbors know Henry Pieper as a careful man—careful of his trees and of his words. They have plenty of respect for his opinion, whether the subject is the June drop, the red spider—or some question affecting the orange grower's interest.



THIS YEAR'S CROP is pretty fair, Henry Pieper says. Nearly half a field box of fine Valencia oranges will come from this heavily laden branch.



THE PIEPER ORCHARD—There are six acres of 23-year old trees, four acres of 17-year olds. Henry Pieper keeps busy fertilizing, irrigating, cultivating, spraying, fumigating, pruning—and finally picking some excellent fruit.

WIND PROTECTION—Tamarack trees bordering Mr. Pieper's place cut down fruit burns from an unexpected hot wind last winter. His loss was only about 15 per cent. Many neighboring growers lost twice as much. Even when the mercury drops to 28° on chill January nights, Henry doesn't lose fruit. The secret is—he watches his trees like babies.

HENRY PIEPER is doing what he likes best to do—growing oranges. His 10-acre ranch, bought 17 years ago, gives him a comfortable living.

Almost any day this summer you can find him out "babying" his trees. He watches their diet—spends better than \$25 an acre each year on fertilizer.

His largest cost item—about \$30 an acre per year—is for pest control. And he tests soil moisture continually, alert to irrigate at exactly the right time.

But Henry Pieper knows that it takes more than good production methods to make orange ranching—or any farm operation—show a profit.

"Before coming to California I spent seven years running a general merchandise store in Nebraska," Henry Pieper told me. "I'd sure worry now if citrus growers had to depend for the sale of their crop on the kind of store-keeping we did in those days."

Tells Experience as Merchant

"Part of the year I'd keep a box of oranges over in the corner for the convenience of a few customers. I never pushed them. Demand was small and oranges were perishable. Even with a mark-up of 25 per cent I figured to lose money.

"I retailed oranges at 50 or 60 cents a dozen—often higher. I bought them from a wholesale produce dealer who got them from another wholesale handler. There must have been at least two or three middleman profits taken out of those oranges before they ever reached me.

"That's all changed now, I'm glad to say. We growers have organized and we sell through cooperatives. This does away with some of those in-between costs that used to raise prices to consumers—and cut down what the producer could get for his work.

Chains Do Selling Job for Growers

"And today efficient selling organizations like Safeway have taken over a big part of the responsibility for moving our crop. They complete the sale efficiently—from producer to consumer in one direct line.

"The chain stores do a selling job that we ranchers can't possibly do for ourselves. First place, they take the farmer's products in such quantity that handling costs are less on each pound or dozen.

"I was reading the other day where Safeway alone takes more than \$2,000,000 of our citrus fruit a year—that makes them just about our best customer.

(Ed. Note: Safeway's citrus fruit purchases, for the year ending June 30, 1934, actually amounted to \$2,230,966.)

"The chain stores cut out wasteful steps in

A new interview each month—**THE SAFEWAY FARM REPORTER**

Follow these interesting accounts of visits to good farms. Learn how successful farmers are thinking. You will gain a clear understanding of how farmers benefit when food gets to market with fewer in-between expenses—and is sold by modern retailing methods.

distribution. And they sell on a small profit margin. All these things help to get store prices down where the average family can afford to buy more of what the farmer produces.

"It's easy to see, too, how the chains build up a big volume of sales on citrus fruits and other fresh produce. They display these products attractively and carry an ample stock all year around. And they advertise them in their own newspaper space and in the stores.

"When I was a merchant I couldn't do any of these things—I wasn't big enough. And today, as a farmer, I still can't do anything to increase demand for what I raise. But the chain stores can—and do.

Farmers and Chains Are Partners

"Just as important as saving money for consumers is this fact—the chains see the need of protecting the farmer's best interests.

"Safeway has gone on record as being opposed to 'loss leader' selling of farm products. And they've also set up the policy of paying producers at least as much as we can get from other buyers.

"Because of these Safeway policies we farmers are glad to trust this organization with the job of selling our products. It means producers and distributors are working shoulder to shoulder at the same job—to secure fair prices for growers, distribute farm products most economically, and encourage increased consumption by lowering the price consumers pay.

"I'm just a small grower. But as a partner with the chain stores I have an army of trained salesmen working for me all over the nation."

THE SAFEWAY FARM REPORTER

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Los Angeles, California

Special 1936 Price
Write Us for Information

We Are Agents For:
California Fuel & Utilities Briquets,
Adams & Company Heavy Duty
Heaters, Oldwood Kindling

Cooperative Pest Control

Continued from Page 476

served, they know what each individual property needs to keep it in good shape. Other advantages are that first class work is assured, it is done at the proper time and the small grower gets just as much attention as the large grower. This work by the association has also narrowed the spread in the cost of fumigation.

Work is done only under signed authorization by the grower, said Mr. Webber.

As disadvantages, Mr. Webber stated that if they did poor work or were arbitrary in any way it might have an effect on membership, but if properly handled might draw members into the association. Another disadvantage is that it places an added burden on the association manager whose main job is to harvest and prepare the fruit for market.

Mr. Webber stated that their pol-

icy had been to depreciate the equipment fast enough to pay for replacements—fumigation tents in about five years and spray rigs 25% per year.

A general discussion on the subject of pest control was led by R. S. Woglum, Exchange entomologist. Mr. Woglum praised what had been done in those areas which had set up protective districts. A number of others have more recently set up control or eradication areas and Mr. Woglum stated that it would be a fine thing if through these efforts the few scale infestations might be cleaned up. In districts where the scale is pretty well scattered throughout all orchards it is almost hopeless to think of eradication. He mentioned that while it might be possible it would be commercially impracticable.

Harold J. Ryan, agricultural commissioner for Los Angeles county, declared that we must stop looking at pest control as an individual menace. "It is a community problem, just as

are fire and flood control," he added. He asked if it were not possible to set up some kind of community control to stop the build-up of these scales in our orchards.

1111

Early Citrus Records

Continued from Page 470

a whole, says this grower. "Growing a crop is one thing; selling it is another" he said to the writer.

Howard Waite's experience in growing citrus has not been entirely confined to the Riverside district. He had considerable valuable experience on the Mills orchards at Maxwell, California in 1912. He helped in expanding the plantings of citrus on the vast property, joining J. O. Mills, Sr., formerly of Riverside but who became general manager of the Mills property.

Mr. Waite was graduated from Stanford university in 1917 and almost immediately thereafter entered the country's service in the World War. He is active in the American Legion and takes a keen interest in civic affairs. He is also a director on the board of the East Riverside Water Co.

Growth and Water Losses Affected by Soil Temperature

Continued from Page 467

soil temperature the growth was least and the weight of the original leaves was at a maximum. The temperature range of 23 degrees to 31 degrees C was very favorable for growth. Root and total growth increased with increasing soil temperature to 31 degrees C inclusive. The highest temperature (35 degrees C) was somewhat more favorable than the lowest (19 degrees C).

Transpiration losses in citrus were determined by growing rooted leafy-twig cuttings of lemon and grapefruit in soil as before except that the soil was covered with several layers of heavy oil cloth. The three cuttings in each container were tied firmly together and the covers were tied about the cuttings and the container. In addition, cotton was wedged between the twigs.

The water-holding capacity of the soil mass was more than sufficient to carry the experiments for the 14 days of each experiment. Water loss at the end of each period was determined by the loss in weight and then the soil was brought to a new original weight by the addition of water.

At the end of the experiments, graphs were made of the dry weights of the leaves and roots and of the total leaf areas of the cuttings. The experimental period was found to be

short enough so as not to produce any trends in the growth of the cuttings.

The first 14-day period was allowed as time in which the cuttings might recover from the shock of being transplanted.

The data in table 2 indicate that

degrees C inclusive and dropped at 35 degrees C to values equivalent to temperatures between 19 degrees and 23 degrees C. The losses from grapefruit leaves were less than those of lemon and were greatest at 27 degrees C.

These studies indicate that soil tem-

Table II—Water Loss in Grams Per Square Inch of Leaf Surface During 14-Day Periods of Growth of Citrus Cuttings.

Temperature Centigrade Degrees	May 13-27, 1935		May 27-June 10, 1935	
	Lemon	Grapefruit	Lemon	Grapefruit
19	7.96	7.62	7.14
23	9.80	7.49	10.05	7.24
27	10.57	10.54	10.32	9.89
31	11.12	7.33	10.65	7.87
35	9.03	5.78	9.70	6.72

the water losses per unit of leaf area in the lemon cuttings increased with increasing soil temperatures to 31 de-

perature affects the growth of citrus and also the water loss per unit of leaf area.

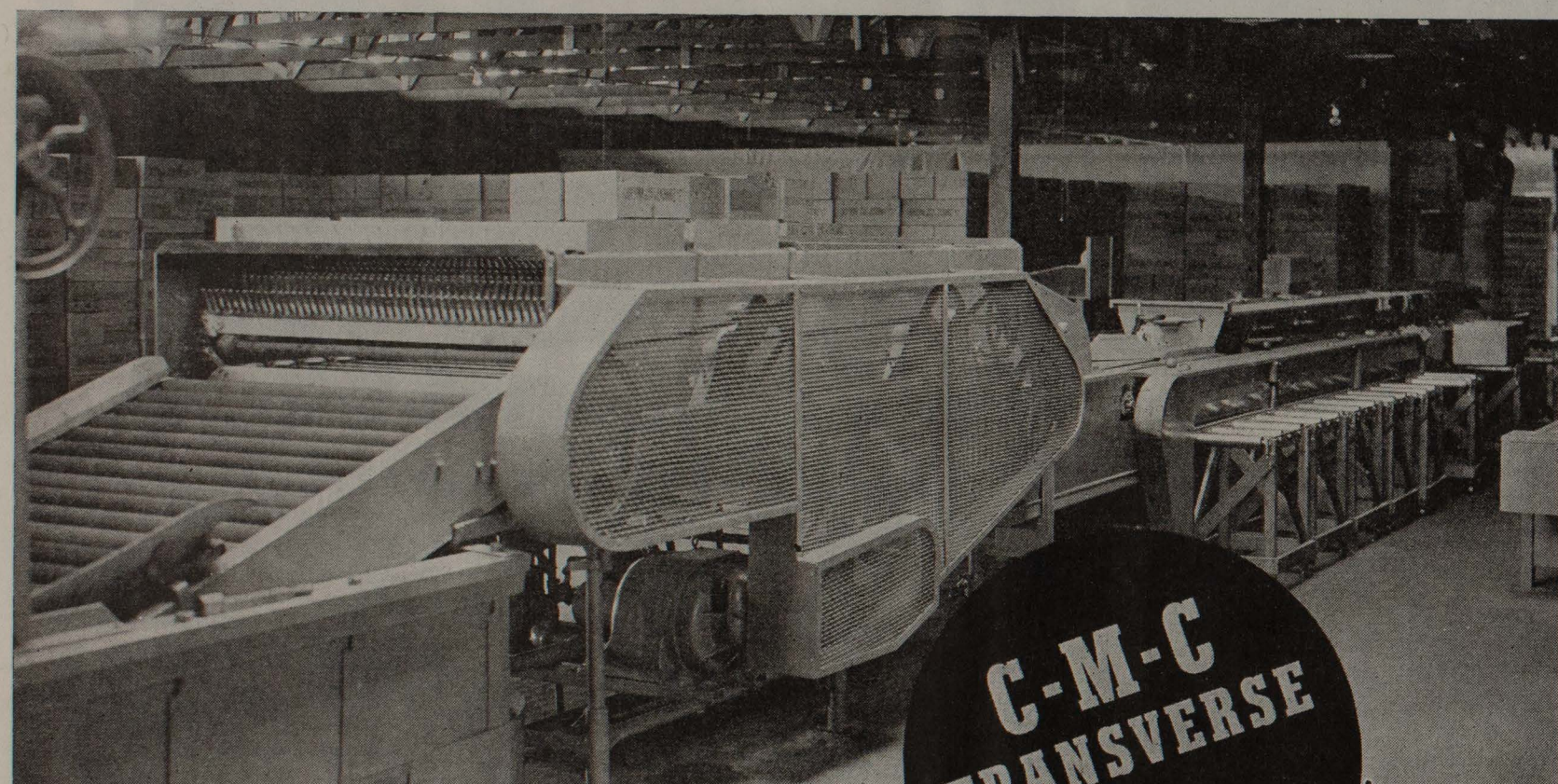
PETROLEUM COKE BRIQUETS FOR ORCHARD HEATING

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Phone: Compton 10261—LAfayette 1147

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BUILT to meet the demands of the most exacting lemon packing authorities. This improved Washer has tremendous capacity and does a more thorough cleaning job than the most efficient tandem submerged type of washer. You get less decay and you wash the fruit at less cost.

Already in some of the most outstanding packing houses in the state, the C-M-C Transverse Lemon Washer is making a

record for itself . . . and for these houses . . . every day of the citrus year. At your earliest opportunity talk with us about this fast-working, cost-cutting machine and its advantages to every grower whose fruit is C-M-C washed. Or talk with any packing house manager who operates one.

In the new Packing House of Rancho Sespe, near Santa Paula, the latest improved C-M-C Transverse Washer and Rotary Bin Sizers will be installed this Fall.

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WILL ONLY PAY FULL
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If so, pick them green-ripe and color them with Ethylene. You get them to market 2 to 4 weeks earlier than waiting for field ripening. Defeat field mice, wire worms, sun scald, cracking, wind and hail damage.

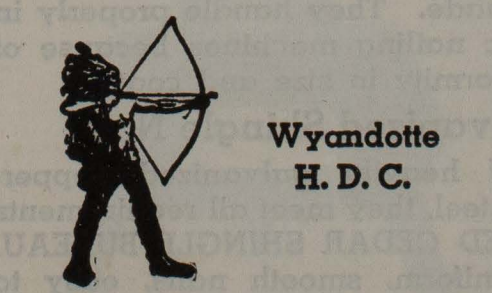
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This 20-page Booklet tells the story of Ethylene Gas for coloring mature fruit and vegetables
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Because Wyandotte makes strong, lasting suds the fruit comes out with a glossy appearance. Ask your jobber today for

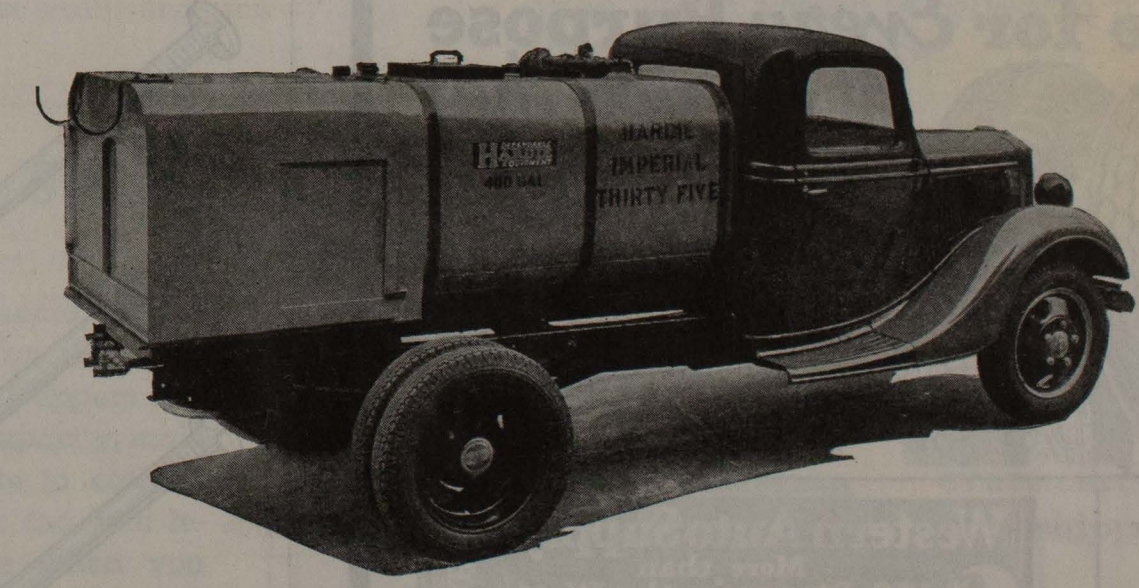


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minute at 700 pounds pressure, you can get it with any Hardie rated at 35 gallons. You don't have to pay more for a bigger sprayer in order to be sure of the gallonage required. Consider the pump efficiency of the Hardie. There is a difference of 18 points between the efficiency of a Hardie pump with an efficiency percentage of 94 plus as compared with a pump that scores 78. That means 7 1/2 gallons of gasoline to operate the Hardie as against 10 gallons to deliver the same amount of spray with the less efficient pump. Obviously a Hardie operating at 80 R.P.M. will outlast another sprayer operating at 108 R.P.M. to do the same job. Look at a sprayer from all angles. Come in and see the new streamlined Hardies—every modern detail that is worth having and good old proved Hardie value and stamina.



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Farm TIRE -
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Better Traction
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The
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All Purpose Tread

No matter how "Slick or Soggy" the going may be... here's a new tire that takes hold and pulls. It doesn't skid forward or sideways, and it doesn't slip back. It is "Self-Cleaning" and doesn't clog with mud or snow... and the tread is so thick and tough—the massive lugs so high—that it gives you incredibly long SURE-GRIP mileage...! And—the Western Giant Sure-Grip All-Purpose Tread Tire is remarkably easy riding too. For all year service on farm equipment, it is unquestionably the safest, most satisfactory tire to buy.

Made in Following Sizes: —Ask for Low Prices
6:00-16 (6:25-16) and 5:50-17 (5:25-17) 6 full plies...
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115 stores in California	2 stores in Nevada
8 stores in Arizona	4 stores in New Mexico
14 stores in Colorado	15 stores in Oregon
2 stores in Hawaii	5 stores in Utah
7 stores in Idaho	20 stores in Washington
5 stores in Montana	4 stores in Wyoming

Insect Pest and Plant Disease
Interceptions Recorded by State

PERUSAL of the report of the bureau of plant quarantine of the California department of agriculture on the insect and other animal and plant disease interceptions at California quarantine inspection points during 1935, shows the tremendous value of this type of work in keeping from our state dangerous insect pests or diseases which if established in our fields or orchards might result in millions of dollars of damage.

This report lists the animal and plant disease pests taken in commodities moving in foreign and domestic commerce or being carried in private automobiles or personal baggage of steamer and automobile travelers.

The bureau of plant quarantine maintains inspection stations at the three major maritime ports (Los Angeles, San Francisco and San Diego) and on all principal highways entering the state. In addition, plant quarantine inspection is carried on in each county under the jurisdiction of the county agricultural commissioners.

Maritime Ports

During 1935, 7924 lots of plant material were found actually infested with insects or other animal pests at the three major ports, representing 1525 species.

Interceptions of insect and other

animal pests of outstanding importance included the following: Mediterranean fruit fly taken three times in coffee berries, once in passion fruit and once in grapes from Hawaii; Mexican orange fly, a serious pest of citrus, taken in oranges from Mexico; a fruit fly and an undetermined trypetid taken on four occasions in banana trash from Panama; a citrus white fly on *Osmanthus* sp. from Japan; Philippine orange moth taken on two occasions in sour limes from the Philippine Islands; the camphor scale, a serious citrus pest, was taken 50 times from Japan on grapefruit, lemons, limes, oranges, tangerines and pomelos, the same pest was intercepted three times from China on pomelos and oranges; a scale insect (*Pinnaaspis minor*) was taken on 187 occasions from nine countries on 16 different hosts.

Pathological interceptions at the maritime ports included 956 lots of plant material infested with plant diseases representing 111 species. Some of the more important were citrus canker taken on oranges, limes, tangerines and citrus foliage from China, also on limes from the Philippine Islands and on pomelos from China; citrus scab on limes from Ecuador, Japan and Puerto Rico, on oranges from Brazil, Japan and Panama, and on pomelos from China;

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NAILS

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KEYSTONE CEMENT COATED NAILS are used extensively for crating and boxing because of their ability to grip and hold. They're made of our own open hearth copper-bearing steel, with 4-shouldered reinforced heads, sharp points, great uniformity—as fine nails as can be made. They handle properly in automatic nailing machines because of their uniformity in size and coating.

Galvanized Shingle Nails

Made of heavily galvanized copper-bearing steel, they meet all requirements of the RED CEDAR SHINGLE BUREAU. Clean, uniform, smooth nails, easy to work with.

KEYSTONE COMMON NAILS are favorites because they're straight, sharp and uniform. Write for samples.

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San Francisco, Calif.



citrus black spot on lemons from Australia, and on lemons and oranges from Japan; citrus melanose was taken 248 times on grapefruit, limes, pomelos, oranges and tangerines from Japan, China, Mexico, Florida, Canada, West Indies, South Africa, Puerto Rico, Panama, Palestine, Isle of Pines, Louisiana and Texas.

but as Gainesville is considerably north of the citrus growing areas of that state, best results were not possible there. Recently Dr. Camp has been transferred to the charge of the experiment station at Lake Alfred which is in the heart of citrus growing districts of Florida.

Border Stations

During the year 1935, 718,432 automobiles and stages from out of state, exclusive of local traffic, were inspected at the California border inspection stations, from which were intercepted 22,452 lots of contraband plants, fruit, vegetables and other plant material in violation of the California quarantine proclamations or orders or Federal domestic quarantines, or actually infested or infected with some serious agricultural pests. Of the total number of automobiles inspected, 4,861 of these transported 12,681 specimens of living insect, animal and plant disease pests, comprising 934 different species.

Among the more important interceptions at the border inspection stations during the year were the Mexican fruit fly, citrus white fly and camphor scale.

The circular gives a detailed list of the pests intercepted, the host material and the place of origin. Copies of this report, special publication No. 141, may be secured from the state department of agriculture at Sacramento.

Dr. A. F. Camp, director of the Florida citrus experiment station at Lake Alfred, Florida has been a visitor to his old home state, California, this summer. Dr. Camp's former home was at Pico, California, and he studied at Berkeley. He served under Dr. H. S. Fawcett now of the California citrus experiment station staff. For many years Dr. Camp has been on the staff of the agricultural experiment station of the University of Florida at Gainesville, Florida. Much of his work has centered on citrus

Dr. Camp, Florida Citrus Specialist Visits Here

1 1 1 1

WE ARE SORRY

During the Valencia season the demand for the new Corona Orange Clippers has exceeded our capacity, making it impossible to call on everyone. You, too, will insist on Coronas when you learn the clean, easy picking and long life of drop forged, hand-made clippers. Order through your Supply Company, or

Corona Clipper Co.
Corona, Calif.



TUTTLE BOWL
No. 9, Short Handle
No. 12, Long Handle

VALENCIA BOWL
No. 3, Short Handle
No. 11, Long Handle

Slight Advance in Price Oct. 1st

6. In my own grove there are certain trees which, because of gravelly soil, often become wilted between irrigations, resulting in retardation of growth. The oranges from these trees are smaller than the average and never show signs of granulation.

In regard to the whitewash spray which is said to reduce granulation, is it not possible that this retards growth by clogging the pores of the leaves?

Possibly the variations in individual trees found by the Citrus Experiment Station might be traced to soil, water or other conditions which affect growth.

Since granulation does not always seem to be directly correlated with rate of growth of the fruit, conditions affecting the production of sugar and acid must naturally enter into the problem also.

Very truly yours,
ROBERT S. WOODS.

Communications

Granulation Theory

Editor's Note: Robert S. Woods, a citrus grower in the Azusa district and a member of the Azusa Citrus Association as well as of the Calavo Growers of California, offers the following suggestion in response to a request that growers assist in the possible causes for or sources of granulation which has developed in certain Valencia districts: September 4, 1936.

Editor The California Citrograph,
1118 Story Bldg.
Los Angeles, Calif.

Dear Sir:

In response to the request for assistance from growers in determining the cause of granulation in Valencia oranges, I should like to mention my own theory, which is, however, not based on any laboratory study, but merely upon general observation. This theory, or guess, is that the trouble is caused by an excessive and unbalanced growth in the tissues of the maturing fruit, whose growth is evidently capable of stimulation beyond the capacity of the tree to manufacture the sugar and acid constituents of the juice. The facts which suggest this conclusion are as follows:

LEMONS

Favorable market conditions for lemons throughout the year have kept supplies of cured lemons exhausted, so that shippers have of necessity been packing and shipping fresh, uncured stock.

Shrinkage in packs, consequently, has been pronounced, resulting in extremely loose packs appearing in all markets, even in many of the best brands.

Brogdex brands have arrived with full packs under these conditions, and favorable comments have been received from the trade because of the recognized ability of the Brogdex process to retard shrinkage.

Brogdex process increases returns to growers under all conditions, but in periods of high prices it has its greatest earning power because of improved grade, greater pack-out, maintenance of full pack and fresh appearance, all of which is reflected in retailer and consumer preference.

BROGDEX PROCESS represent the very best in packing house practice. Therefore, they merit the investigation and consideration of every citrus fruit grower and shipper.

BROGDEX SERVICE

BROGDEX MACHINERY

BROGDEX COMPANY, POMONA, CALIF.

BROGDEX
REDUCES DECAY
RETARDS SHRINKAGE

THIS FALL— as fruit buds form—

feed deciduous trees **NITROGEN**
in this instantly available form

Autumn, beginning right now is the crucial period in bud development. The vigor of the buds—the very number of them a tree will have—depends on how much nourishment is now available.

That is why so many orchardists are “Nitrogating”—feeding nitrogen to the trees by applying Shell NH₃ in the irrigation water.

By this revolutionary method they are making nitrogen available immediately—when it can definitely help the buds to form.

Ideal for Citrus too, and Truck Crops

If you grow citrus, peaches, prunes, sugar beets, rice or truck crops, “Nitrogation” can help you make more money from your land. Crops almost without exception produce better when supplied extra nitrogen. And Shell NH₃ remember, is actually guaranteed at least 81% available nitrogen!

Write or telephone for more information about the modern method of “Nitrogating.” Learn how economical it is. Call the nearest Nitrogation Service listed below.

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Orland . . . 10F4	Suisun . . . 186
Colusa . . . 7	Winters . . . 104W
Stockton . . . 7657	Woodland . . . 136
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GREENING-SMITH COMPANY

Tel.	Tel.
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Turlock . . . 1313	Van Nuys . . . 172
Escondido . . . 413	Watsonville . . . 1881
Firebaugh . . . 24	Santa Maria . . . 71
Bakersfield . . . 5782	Phoenix, Ariz. . . 30563

SHELL CHEMICAL COMPANY

100 Bush Street, San Francisco



NITROGATION SERVICE

Santa Paula Orange Ass'n and Rancho Sespe Constructing Plants

Santa Paula's new citrus cooperative, the Santa Paula Orange Association, will have a new packing house of latest design ready for operation for the 1937 season, according to Roy C. Wilson, Santa Paula architect, who designed the plant and who is supervising its construction.

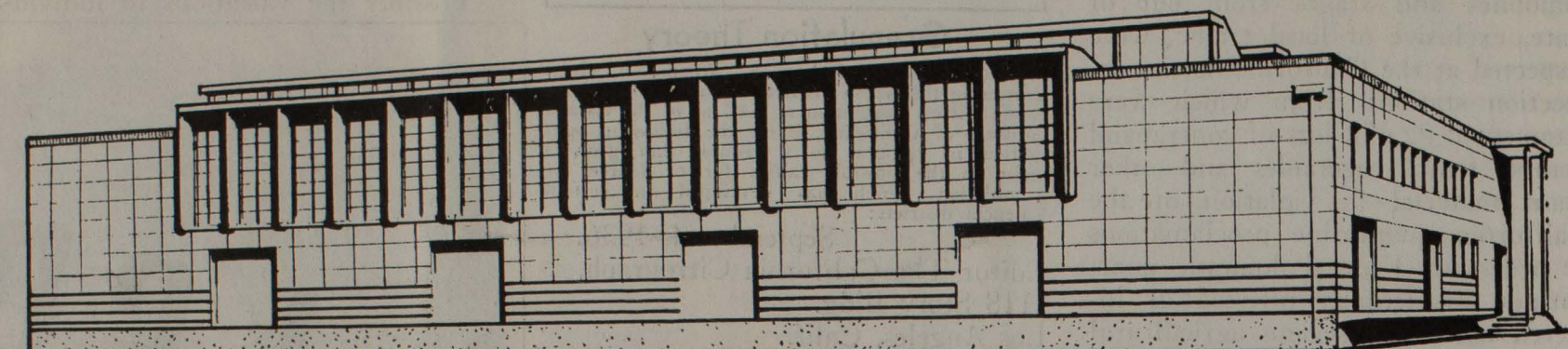
This association was formed to better handle a portion of the rapidly

Association and serves on the board of directors with C. P. Foster, Gene Gardner, Wm. Boosey, Leon Pressey and Percy Strickland. No manager has been selected as yet.

The plant under construction will occupy the 145x100 foot site of the old Mupu citrus house which was destroyed by fire in 1930. The Mupu Association erected a new plant at an

basement walls being of concrete and the superstructure of diagonal sheeting covered with 2x4 foot insulation board for waterproofing, and which will be put together with horizontal and vertical metal strips. The exterior will then be painted in light lead and oil paint, for durability and to resist heat.

Lighting will come from the saw-



Artist's sketch of packing house being erected for Santa Paula Orange Association.

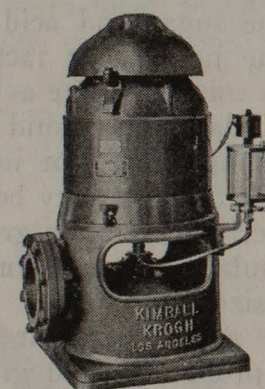
increasing volume of orange production in the vicinity, the existing facilities being taxed nearly to the limit of their capacity. The acreage served lies principally in the area east of Santa Paula canyon and joining the western fringe of Fillmore Citrus Association. Ben C. Hedrick is president of the Santa Paula Orange

other location in replacing the burned plant. In addition, a lot 125x150 feet in size, directly across the alley, has been purchased which will provide future empty box storage, some Mexican quarters, garage and picking ladder storage space.

The building will be of concrete and stud frame construction, the

tooth roof and the bank of 14 windows, each 12 feet in height along the north wall, the south and east walls being blank. Offices and rest rooms on the mezzanine will be lighted from windows in the west wall.

The interior—ceilings, walls and even machinery—will be painted in



How does it compare with VICTOR-KIMBALL-KROGH?

This is the question becoming more and more pertinent among discriminating pump purchasers. ¶This is the important question asked by pump-wise buyers. ¶It is the question logically resulting from over sixty years of dependable pump building—from indisputable evidence of the performance records of thousands of Victor-Kimball-Krogh Deep-Well Turbine Pumps.

¶It is the paramount question today when past depression years speak eloquently of the wastefulness of cheaply built depression products. ¶No pump will last to justify the purchase price nor guarantee enduring pump efficiency if it cannot measure up in workmanship and proved design-excellence with Victor-Kimball-Krogh Deep-Well Turbine Pumps.

¶This is not an idle boast, but a straightforward statement of facts provable to any sincere investigator.



VICTOR EQUIPMENT COMPANY
KIMBALL-KROGH PUMP DIVISION

515 Harrison Street SAN FRANCISCO 1010 E. 62nd Street LOS ANGELES

new bright coloring which has been scientifically worked out as being most efficient in industrial plants. Architect Wilson has made a particular study of the effects of colors on plant workers and through the cooperation of a color technician has worked out complementary tones for maximum efficiency with least eye-strain in citrus packing and fruit handling.

All of the washing, grading, packing and conveying machinery will be new. It will be installed by the Citrus Machinery Co. and will have a capacity of four cars of oranges per day. The building will be equipped with air-cooled coloring rooms and a low pressure steam boiler for heating washing water.

Rancho Sespe Addition

A sizable addition to the packing plant of Rancho Sespe is also under construction. The unit will house the washing equipment, all of which will be new, and will greatly increase the plant's storage capacity. A change from the tray method of packing lemons will be made by the installation by the Citrus Machinery Co. of new rotary bin sorting and sizing machinery. This will be in the old portion of the house. The washing equipment in the new portion will be the very latest type of transverse lemon washer, capable of handling either lemons or grapefruit. A complete line of box conveyors in both old and new units will also be installed.

The entire basement of the new addition to the Sespe packing house will be insulated, probably with two-inch cork and will be air-conditioned with steam jet cooling equipment. All walls and roof of the plant will be insulated with fibre board, protected at the floor with a five-foot high wood wainscoting.

Lighting of the new wash room and packing machinery will be done with “Insulux” glass blocks which keep out the glare of the sun and also insulate against heat.

Homer Cheek is manager of the Sespe lemon house and the construction is being done by day work through the ranch construction department, and is directly in charge of James Duncan of the Rancho Sespe organization. Roy Wilson of Santa Paula designed the new unit.

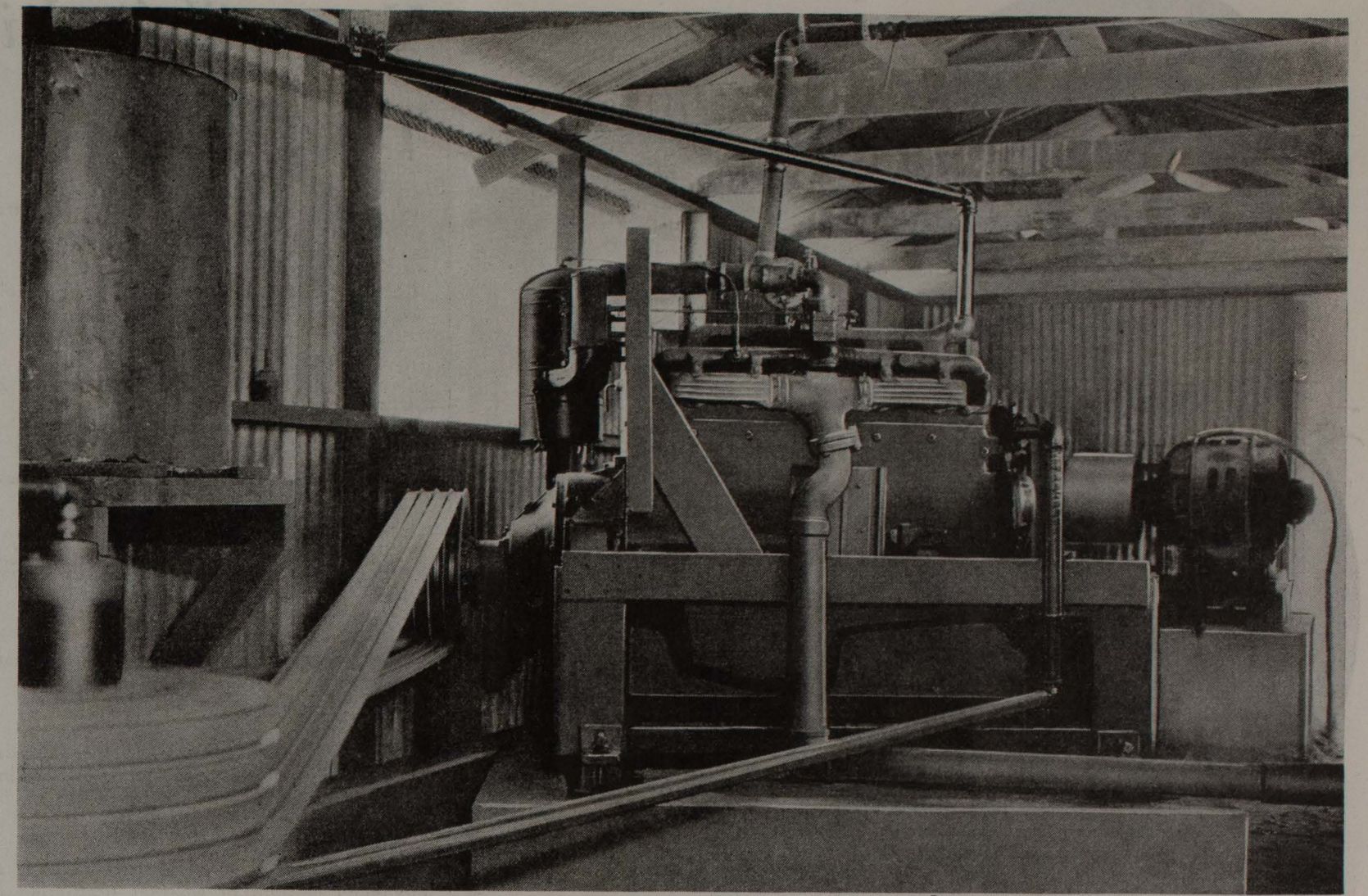
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Pecans Competing

For Walnut Mart

The walnut industry of California is faced with an upward trend in pecan nut and a very rapid increase in Cashew nut consumption, D. W. Smythe, assistant in agricultural extension, recently told a group of walnut men.

“The competition which walnuts will have from pecans in all probability will become more severe than it has been in the past,” Smythe said. “It appears that by 1940 an average pecan crop in the United States will amount to almost 35,000 tons, or one-fifth larger than the average for past five years.”



The International PA-100 Power Unit used by Cloid R. Gray in pumping water for his 45-acre citrus orchard

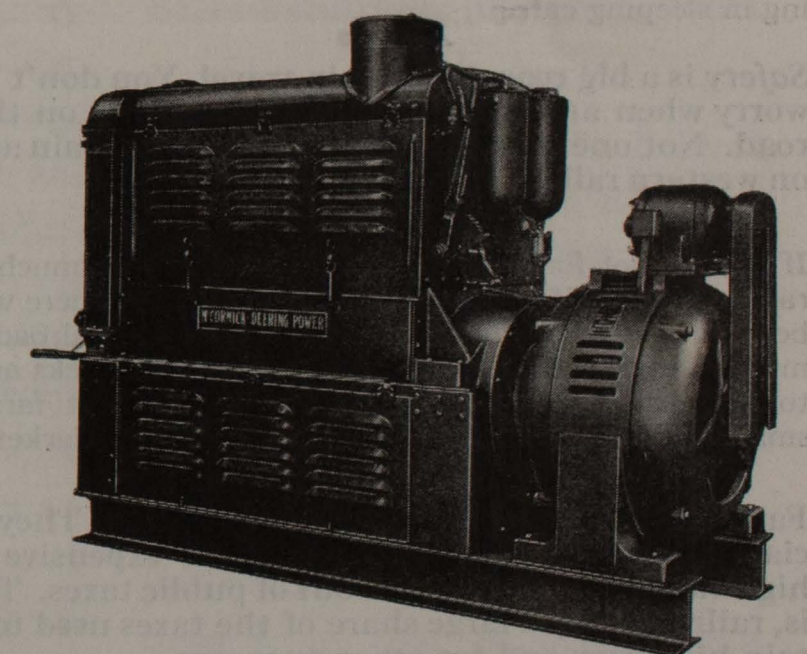
Operating Costs Reduced 66²/₃% by INTERNATIONAL POWER UNIT

LOWERED operation costs are universally experienced by owners of International Power Units; in the case of Cloid R. Gray of Highland, California, a saving of approximately 66 2/3% in operation costs has been effected. Read what Mr. Gray had to say about his power unit on the 19th of August:

“About the middle of April I bought one of your International PA-100 Power units for pumping water. This unit has operated about 15 (24-hour) days per month or a total of some over 1400 hours without a penny's expense for parts.

“Because of a low water level, I am pumping only from 21 to 45 inches of water, but feel that this outfit could easily handle 75 inches of water. Part of the water is boosted as high as 225 feet.

“I am using natural gas in the operation of this PA-100 and find it very satisfactory. The consumption is about 600 cubic feet per hour and the oil consumption is only about one quart every 24 hours. My total operation cost is about one-third as much as my former power bill for electricity. Naturally, I am very well pleased with the savings which the PA-100 has enabled me to make.”



An International PD-40 Diesel Power Unit and a Palmer 30 K.W. Generator. This is an ideal combination for low cost operation where both power and lights are desired. . . . Operates at approximately 1/4-cent per H. P. hour. Can also be secured in the PD-80 Diesel size. Eight other units operating on gasoline, distillate, butane or natural gas can be supplied in sizes up to 100 H. P. Write for further particulars.

INTERNATIONAL HARVESTER COMPANY

734 Lawrence St., LOS ANGELES

(INCORPORATED)

201 Potrero Ave., SAN FRANCISCO



When farmers have a good year, so do railroads, and vice versa.

I see more and more farmers are using dependable railroad freight. Why shouldn't they? The railroad is responsible and if anything goes "hay-wire" in transit, the farmer knows where to find the railroad agent. Right down there at the freight depot.

Another reason why farmers like shipping by railroad is that freight schedules have been speeded up. Why, it's getting so on my run that freight conductors think they ought to have the right of way. But our passenger trains have also got faster running orders.

We carry a great many more passengers, both local and long haul, since folks discovered how they can save money traveling by train—fares lowest in history—with substantial savings on round trip tickets—and no more surcharge for riding in sleeping cars.

Safety is a big reason for train travel. You don't have to worry when any of your folks make a trip on the railroad. Not one passenger life was lost in a train accident on western railroads in 1935.

If it were not for the farms there wouldn't be much use for railroads—and if it were not for the railroads there wouldn't be much use for farms throughout the west. Railroads are as much a part of the farm as horses, wagons, trucks and tractors. In fact, the railroad moves the distant farm right smack into the middle of the biggest and best markets.

Farmers figure every angle of a proposition. They appreciate that railroads don't wear out expensive public highways that are paid for out of public taxes. The fact is, railroads pay a large share of the taxes used to maintain highways and for other purposes.

We are proud of railroad achievements, appreciate the public's good will and increased patronage, and pledge continued progress.

Railroad Jim

WESTERN RAILROADS
and THE PULLMAN COMPANY

You will find in this Issue THAT—

soil temperature affects growth of citrus and water loss per unit of leaf area.

study is being made of effect of cold weather on granulation of Valencias.

there is a complete index of Volume 21 which closes with this number.

there is great activity in packing house construction, additions and equipment.

mottle leaf lowers quality by weakening growth and producing small-sized fruits.

cooperative pest control in Ventura county has kept red scale at a minimum.

scaly bark influences quality through deterioration of branches and in making coarse-skinned fruit.

Lemon Men's club members are to hear of advanced method of weather predicting at meeting of Oct. 7.

a 22-year study of navel orange pruning shows no benefits from practice—either in quantity or quality of fruit or tree size.

one grower's theory is that granulation of Valencias is caused by an excessive and unbalanced growth in tissues of maturing fruit.

TO TEST THERMOMETERS
Growers wishing to have their orchard thermometers tested for accuracy by U. S. Weather Bureau men should have such instruments at their respective packing houses by Oct. 12, states F. D. Young, meteorologist. There is no charge for this service.

citrus thrips is causing severe damage in many interior lemon orchards.

the most favorable storage temperature for lemons is 55 to 58 degrees F.

the grower may save \$10 an acre by growing winter cover crops, thus reducing the quantity of organic fertilizers required.

an advertisement in Riverside paper of 1888 offered old bearing orange groves from \$1200 to \$2000 per acre; young groves from \$750 to \$1000 per acre.

pulling of grapefruit from the tree, instead of clipping, may reduce decay losses in Florida, but experts say the practice would increase decay under California conditions.

during 1935, 7924 lots of plant material entering California ports were found infested with insect and animal pests, representing 1525 species; at border stations, 718,432 autos and stages were inspected, 4,861 of which transported 12,681 specimens of living insects, animal or plant disease pests, representing 934 species.

ORDER NOW FOR INSTALLATIONS THIS YEAR

\$300



Junior Model Pipe Line Heater

Up to the present date our sales have far exceeded our total volume for last year. There must be a reason! Investigate the advantages of our pipe line heaters. They eliminate the labor of oil refilling, cleaning and painting. All heaters are provided with positive seating needle valve and regulation indicator. Heater design saves fuel and gives maximum heat liberation close to the ground.

Cone Louver Type Heater

This cone louver type heater is exceptionally efficient and has given good protection under all frost conditions. Equipped with Dunn down-draft tube, hinged stack cap and hinged regulator. We carry a full line of replacement parts for orchard heaters.

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THE BALLOT BOX

IN this business of selling merchandise, nobody's elected for life . . . ever. You're up for re-election every living minute, and they can kick you out as easily as they can put you in.

Out in front of your house, sticking up on the end of a post, there's a ballot box marked "U. S. Mail," and every order you drop into that box addressed to Sears, Roebuck and Co. is a vote of confidence.

We aren't much on loose talk or campaign promises. We believe in

just sawing wood. The country knows Sears, Roebuck and Co. from past performance; and nothing we could say, one way or another, would make much difference. We stand four-square on that Sears catalog of yours . . . it's all the platform we've ever needed . . . all the platform we're going to need. It's been enough to get us elected to office everywhere and we feel that, if we just keep on making good with the people, we aren't going to get kicked out of the twelve or fifteen million American farm homes who seem to think

Sears is still doing all right by them.

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This year we're coming before you with the soundest Farm Economy Program in all Sears history . . . finer and better merchandise and, in proportion to quality, lower priced. It's a landslide to Sears!

Check over with your family what you need. Fill out your order and drop it in that ballot box, out there . . . TODAY.

SEARS, ROEBUCK AND CO.

DIAL IN Sears-Roebuck's sensational new radio program . . . "THEN AND NOW" . . . every Thursday, 7 P. M., Pacific Standard Time; nation-wide COLUMBIA NETWORK. (Sept. 17 and 24 ONLY, One Hour earlier.)



If you see it in your Sears Catalog . . . it's so!

Navel Pruning Studies

Continued from Page 460

object of obtaining the facts for the benefit of the growers and to learn possible improvements in their practices.

Presentation of Data

The table (see page 460) shows the average yields in the pruning plots for the season before the differential pruning was done together with similar averages during the three succeeding seasons and for the period 1919 to 1935. The average for the 21-year period 1915-1935 following the first pruning in 1914 is also presented with the averages for the entire group of pruned and unpruned trees.

Discussion of Results

The pruning systems employed by all of the pruners resulted in sharp and significant losses of crops as compared with the yields of the unpruned trees for the two years following the initial pruning. As a rule the amount of decrease in yield of the pruned trees was about proportional to the amount of foliage cut off the trees by the different pruners, the more severe the pruning the greater the loss of fruit as illustrated by the results of the work of pruner 4 as compared with those of pruners 1 and 5 as shown in the accompanying table.

While there was apparently a little more inside growth on the pruned trees during the three years subsequent to the first pruning the amount

of this growth and its bearing on production was negligible so far as could be ascertained and this condition has held uniformly true up to the present season.

During the three-year period following the 1914 pruning, the fruits from the pruned and unpruned trees in the experimental plot were graded and sized separately. Analyses of these data show that there were no significant differences, at any time, either in the commercial grades or sizes of the fruit from the pruned as compared with that from the unpruned trees.

An estimate of the value of the loss of crops for the three-year period following the heavy commercial pruning of 1914 in the 750 acre Washington navel, Valencia orange, Eureka lemon and Marsh grapefruit orchard, in which pruning plots were located, based upon prices received by the owners of the property for the fruit shipped during that period, was about a million dollars. The cost of prun-

ing must be added to this loss which was an average of 75c per tree in the pruning plots but amounted to somewhat less for the remainder of the orchard as a little more care and time was used in the pruning plot than in the balance of the grove. The pruning of the 250-acre Eureka lemon block was much more severe than in the Washington navel orange and Marsh grapefruit blocks. Furthermore, the pruning of the trees in all of the experimental plots was less severe than in the remainder of the orchard.

The pruning has had no apparent effect on the trees in regard to diseases. Care was used to wax over all except the very small cuts immediately and the tree trunks and main limbs exposed to the sun were whitewashed as soon as possible after pruning.

The yield results for the first season from the pruned trees as compared with those from the unpruned ones were so strikingly low that all pruners were discouraged from

further pruning of the trees in their respective plots excepting for a little thinning of the new growth. At various times during recent years the writers have carried out a very light pruning of all the previously pruned trees by a commercial pruner of established reputation. There have been no significant results from these treatments excepting an apparent small loss of crop in most instances. In addition, in a few individual trees an attempt has been made to gradually renew the tree tops through the systematic removal of some of the large limbs. This effort, too, has proved to be disappointing and this tree renewal program has been abandoned, at least for the time being.

As a matter of fact every attempt to improve the trees in this plot through pruning has been a failure. The trees have been examined from time to time by a large number of the leading orange growers of California and they have universally confirmed the conclusion of the writers in this respect.

In this connection it may be appropriate to mention a brushing-out test in an adjoining plot of 100 trees in this same orchard block, which was described in the *Citrograph* for June, 1931. In that experiment the dead wood was carefully removed along with as little living growth as possible. The results of that study indicated a slight loss of crop from the brushing-out and with no improvement in either the grades or the sizes of the fruit from the brushed-out trees. However, the owners of this grove believe that an occasional brushing-out of their orange trees is justified on the ground of maintaining their capital investment in the orchard. The cost of this brushing-out work was about 50c per tree.

Observations on Special Pruning Treatment

The individual-tree pruning care problem in Washington navel orange trees has been studied by the writers for about a quarter of a century. In connection with the experimental

Structural Pruning

We remove inside timber—to create more space—light and vigor for more and better fruit wood.

On Young Trees: We spread needed frame limbs apart to avoid heavy cuts.

LET US SHOW YOU

CLARK TREE SERVICE

H. D. CLARK, Mgr.

Pomona: Ph. 4236

Santa Paula: Ph. 217R1

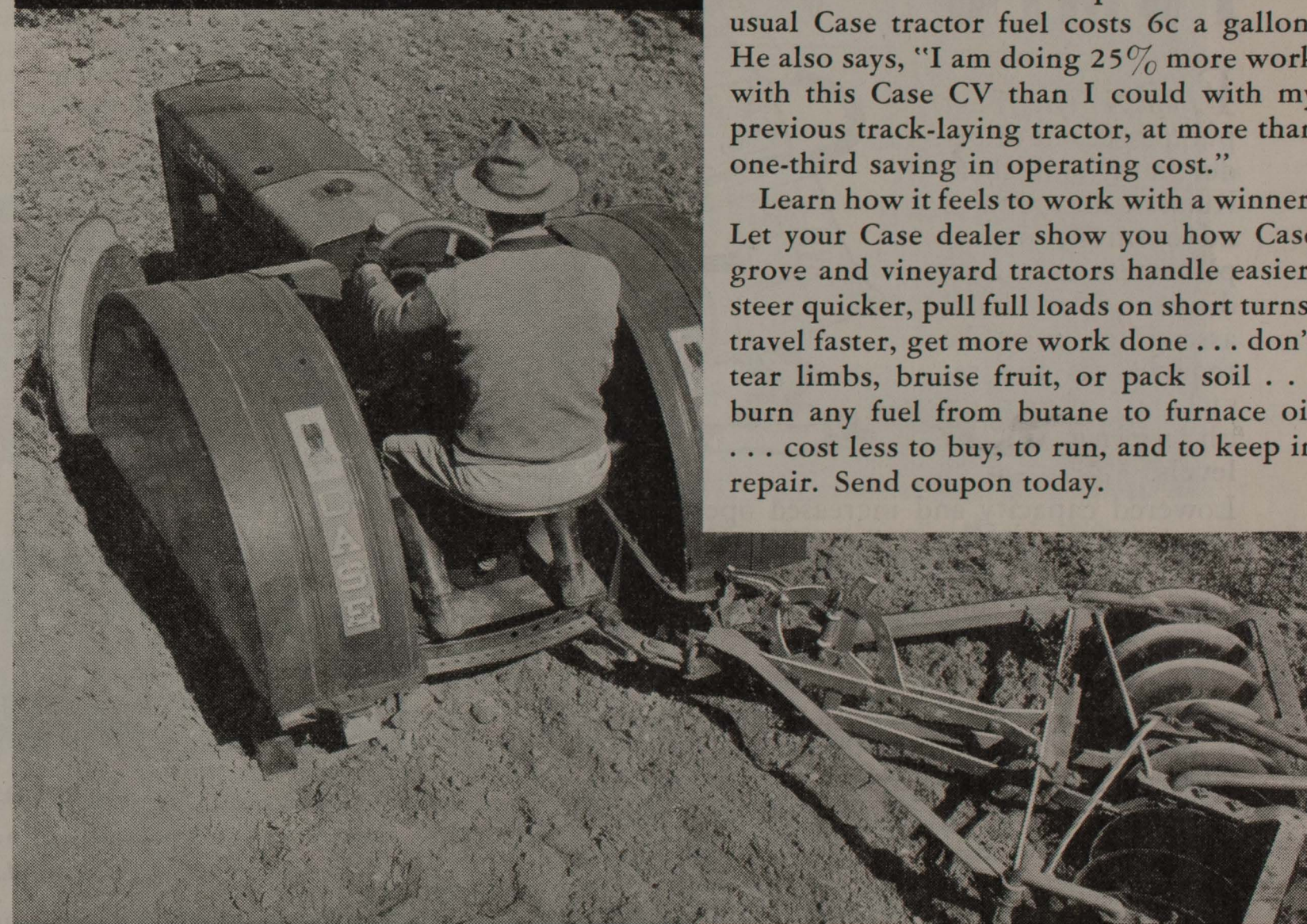
Continued on Page 488

CASE OWNERS REPORT COSTS AS LOW AS

9¢ AN HOUR FOR FUEL!

“Working under any and all conditions, I have done 1400 hours of orchard work on 2100 gallons of fuel . . . very economical on oil, too,” writes Geo. Meiser from a California point where the usual Case tractor fuel costs 6c a gallon. He also says, “I am doing 25% more work with this Case CV than I could with my previous track-laying tractor, at more than one-third saving in operating cost.”

Learn how it feels to work with a winner! Let your Case dealer show you how Case grove and vineyard tractors handle easier, steer quicker, pull full loads on short turns, travel faster, get more work done . . . don't tear limbs, bruise fruit, or pack soil . . . burn any fuel from butane to furnace oil . . . cost less to buy, to run, and to keep in repair. Send coupon today.



SUBSOIL TILLER

Just what California conditions call for! Low down, to guard limbs. Crank screw shovel adjustment from tractor seat. Power lift with trip rope control gives high lift, pressure penetration and fast, convenient operation. All-steel frame, triangular hitch, extra stiff beams and standards for deep work, tough soils, short twists and turns. Points easy to sharpen or replace. Four sizes, 3 to 11 cut. Standards, 24 to 88-inch cut.

CENTENNIAL PLOW

Here is 100 years of plow progress built into an orchard plow. Clearance to handle heaviest cover crops. High-speed bottoms that scour and cover, deep or shallow. Revolutionary rear end design actually carries landside load on rear wheel. Quicker, higher power lift with enclosed clutch. Stronger axles, beams and bracing. Self-setting safety release hitch. Closed wheels, and low-down construction save fruit.

CASE

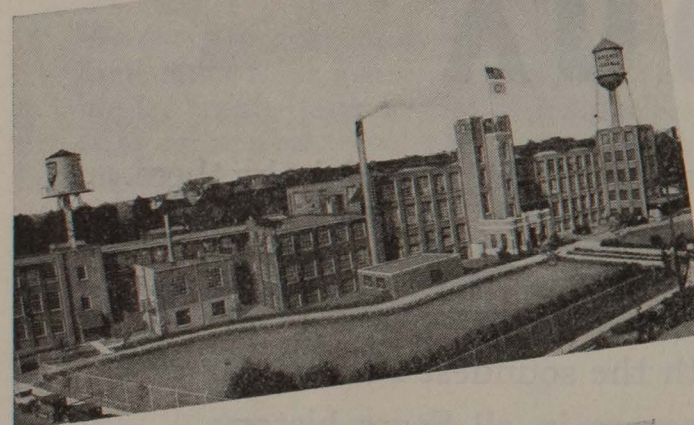
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MEN BEHIND THE GUNS



In every sound business organization—honest management, sensible pricing, equitable agreements, reliable equipment, dependable service and courteous co-operation must all combine to make for satisfactory business dealings.

Because these are as much a part of the Decco Process as are the equipment and materials of operation, we picture here the factory where Decco equipment is made and some of the service organization working with the large number of packing houses now using Decco for decay control.

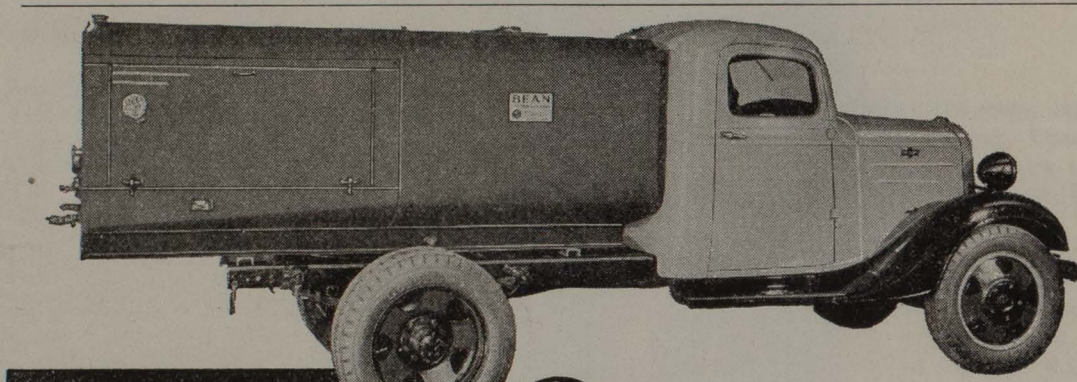
Write for interesting information on how last year Decco saved thousands of dollars for California fruit growers.

WALLACE & TIERNAN SALES CORPORATION

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171 Second St., San Francisco, Calif.

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DECAY CONTROL



50 to 60 GALLONS a Minute

600 to 800 lbs. PRESSURE

If you want capacity and pressure here they are! This big, powerful, dependable, 1936 BEAN has no equals for fast, thorough work & economical operation. It's the choice of experienced operators everywhere when it come to big capacity outfits.

BEAN builds a full line of smaller 'Royals', too. All with full metal construction...including leak-less, all-steel tank, proofed against corrosion. All with the matchless all-enclosed BEAN 'Royal' Pump. All equipped throughout with friction-less ball and roller bearings & working parts entirely separate from solution chamber. All-steel wheels, pneumatic tires...or for mounting on your own truck, as shown.

See your nearest BEAN dealer or write at once for complete information.

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BEAN FULL-ARMORED 'ROYAL' SPRAYERS



UNAFFECTED By Varying Water Levels

The Submersible Motorpump is so designed that it can be placed at any depth in the well, operating submerged in the water. Varying water levels and surface temperatures, therefore, do not in any way hamper its efficiency. For dependable, year-in and year-out service, these sturdy turbine pumps cannot be equalled. Let us show you how you can save on water costs with a SUBMERSIBLE.

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HEALTHY—VIGOROUS—HEAVY PRODUCING

CITRUS TREES

Valencia—grapefruit—lemon—lime grown on sweet, sour, grapefruit and rough lemon rootstock. Free delivery. Order now for Fall or Spring planting. We invite your inspection.

FRED W. MAY NURSERIES

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HERE'S HOW—

To reduce limb-breakage and fruit damage! We use low-built, tractor-drawn, power-spray equipment when spraying large citrus trees.

If interested, get in touch with

R. W. HUNT

Entomologist-Manager

Western Pest Control Service 1333 W. Whittier Blvd., Whittier, Calif.

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SOUTHERN CALIFORNIA EDISON COMPANY LTD.



CALIFORNIA'S Electrical Age HAS JUST BEGUN!

Navel Pruning Studies

Continued from Page 487

to wait several months or a year before attempting to cut off the affected growth, in order to make sure that no more pruning be done than necessary. As a rule much less pruning will be done if this plan is followed than otherwise would be the case.

Small to medium-sized limbs broken from any cause should be removed by careful pruning. When large limbs split along the grain of the wood it sometimes pays to use bolts to draw and hold the sides together until the wounds are healed. It is usually a good plan to cover the larger pruning cuts with some suitable protective material as soon as possible after they have been made.

Dead, or interfering limbs or those bearing off-type fruits can often be pruned out with benefit to the affected trees. When pruning diseased trees care should be taken to avoid any possibility of transferring any disease to healthy trees by means of the pruning implements.

In the case of trees of vegetative strains such as the so-called Australian navel, little or no improvement in their production has been accomplished through pruning. Sometimes the yields of such trees have been temporarily increased by the girdling practice.

Individual tree pruning care is now believed to be requisite in most navel orange groves. There is no question in the writers' minds that such care is desirable and essential in

most instances and that this method should replace the wholesale pruning method that is quite generally used.

A Navel Orange Pruning Program

A brief outline of a navel orange pruning program is presented herewith, based upon information gained through wide observations of commercial pruning over a considerable period of time and the experimental experience reported in this article.

In the first place it seems appropriate to point out again in this connection the importance of securing inherently fruitful strains of the Washington navel orange, in which the trees require much less pruning care than those of the vegetative strains such as the Australian.

In the nursery, the pruning of the young trees is largely confined to heading them at the proper height and the spacing and training of the main branches which are intended as scaffold limbs.

In transplanting, the cutting back of the main branches should be done systematically, care being used to encourage the foundation of a strong, well balanced framework for the tree top.

Well grown young orchard trees of the best Washington navel orange strain need but little pruning attention. The removal of any undesirable adventitious growth on the tree trunks, thinning the growth in the tree tops in some instances, and the treatment of any branches that have been injured, include most of the

pruning care needed so far as our observations have gone.

With full-bearing navel orange trees of the best strain, grown under favorable environmental conditions, little pruning has been necessary in the orchards studied thus far. In some instances an occasional brushing-out of the dead or decadent growth may be advisable or some careful thinning of dense top branches may be necessary. After frosts, desiccating hot winds or other extreme climatic conditions, the growth that is finally determined as seriously injured or dead should be removed by judicious pruning.

In all instances it should be kept in mind that pruning is not a substitute for intelligent bud and rootstock selection, adequate cultural care or effective protection from adverse climatic influences.

Conclusions

A review of the experimental evidence summarized in this report leads to the conclusion that any pruning that was done was detrimental to the yields of the pruned trees and about in proportion to the amount of living foliage cut off. No improvement in the commercial grades or sizes of the fruit from the pruned trees was found at the times this matter was studied. In the trees in the experimental plot, now 33 years old, all attempts toward the systematic renewal of the tree tops through pruning have failed to accomplish significant results.

While the details of navel orange tree pruning practices will probably depend on strain characteristics, cultural conditions, climatic influences and possibly other factors, it seems apparent from our experience that with dependable trees of the best strain grown from carefully selected buds and rootstocks, with intelligent culture and with effective insect pest and disease control, favorable soil, irrigation and climatic conditions, little pruning is needed at least until the trees reach a greater age than



William Ross Packing House of the Oxnard Citrus Assoc., Hueneme, Cal. Storage capacity 350 cars.

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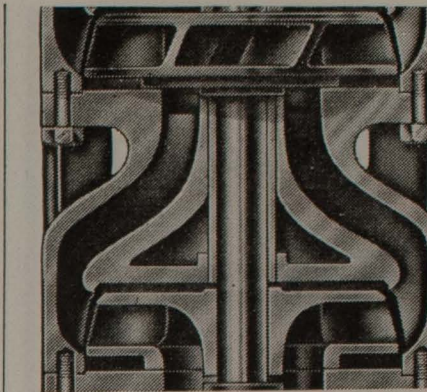
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any now available for study. Brushing out of mature trees to maintain the capital investment may be a desirable practice in some cases.

Pruning is a rather costly orchard operation and when severe the trees usually require two or three years to return to their normal fruiting production. In some examples which have been observed it seems likely that the money spent for pruning could have been expended much more economically and advantageously for improvements in irrigation, fertilization or other cultural practices.

It is believed that a safe principle is not to prune if in doubt as to its advisability or at least to wait until a definite need for the proposed pruning has been demonstrated. In other words, if in doubt don't prune.



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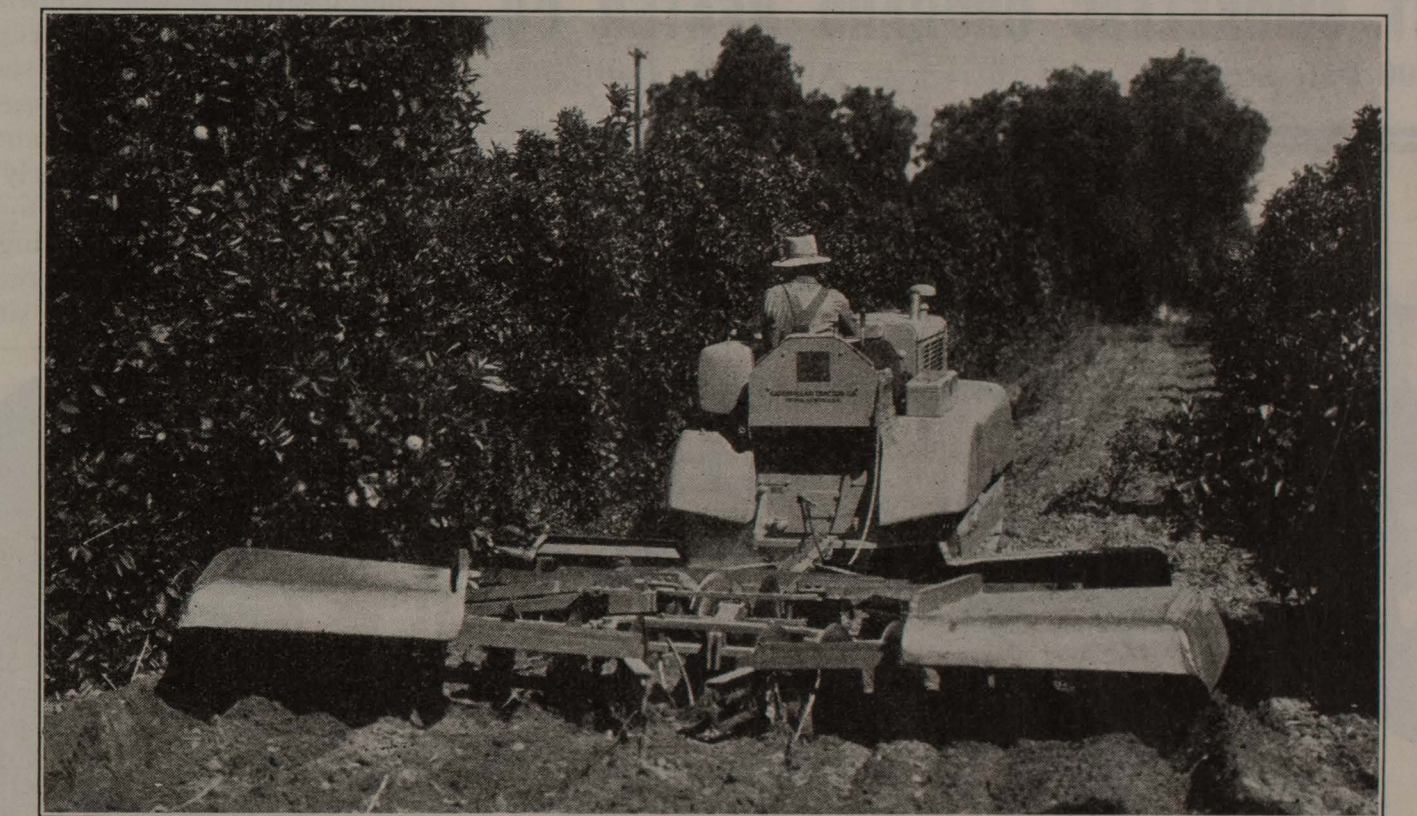
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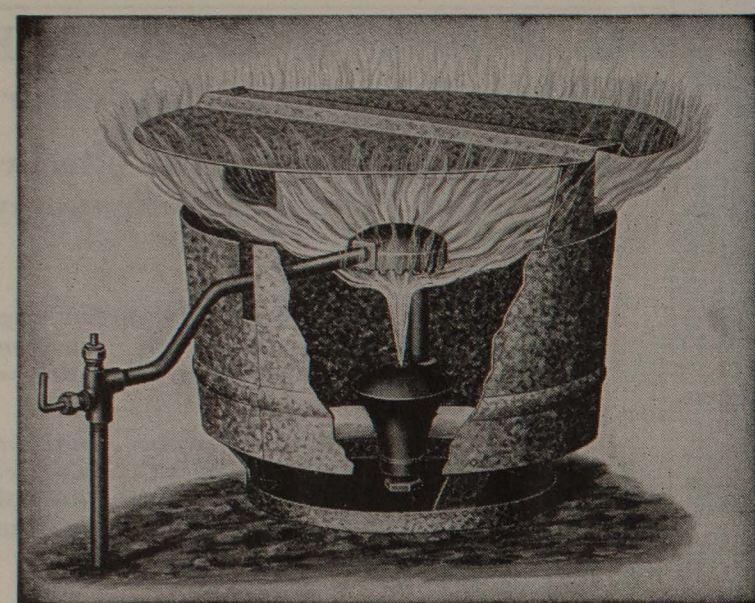


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Timely Information on Insect Pest Situation in Southern California

The accompanying excerpts are from the September circular published by the bureau of pest control of the California Fruit Growers Exchange.

Fall Dusting for Thrips on Lemons in the Interior

THE citrus thrips at present is causing severe damage in many lemon groves in interior areas from San Fernando to Corona. It is attacking particularly the young growth and, where this is sparse, deforming or "rat-tailing" it as fast as the growth appears. Where blossoms are scattered it often attacks and weakens the stems, causing drop. Only when a heavy flush of growth appears is the effect reduced. Eurekas are more affected than Lisbons or Villafrancas.

Many growers desire to attempt control with sulfur dust but are waiting for the cooler autumn weather in order to avoid the hazard of fruit burn. The hazard of fruit burn from hot weather is well known but our own experience is that fruit exposed to high temperatures for such a long period as has been the case this season, is much more resistant to burn than in the spring or early summer.

The desirability of a flush of growth and fruit-set during the next six weeks, and its protection from thrips damage, creates a situation in

groves badly infested with thrips as to whether the possible damage from thrips injury might not outweigh the possible damage from sulfur dust. Our belief is that there are many groves where dusting at this time is important. Watch the weather and dust preferably on a declining hot spell, using about ½ pound of sulfur per tree. Follow within three or four weeks with a second dust, if possible.

Before dusting, it is advisable to formulate your pest control program for red scale. If fumigation only is to be used this fall, dusting offers no hazard before or after treatment. Dusting closely following fumigation has been unusually effective against thrips. If oil spray is to be used, it would be hazardous to apply the spray within four to six weeks after the sulfur application.

Fumigation For Red Scale in Santa Barbara County

There is a considerable area in Santa Barbara County that should be fumigated for red scale this season. Experience the past few years has shown that the work can be started in September with comparative safety and carried on with satisfactory results. Therefore fumigation in this area should get under way at once. It is advantageous to complete as much fumigation as possible before



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Feed your trees with Natural Chilean Nitrate and two things happen:

- 1 Your trees get their needed nitrogen in quickly available form.
- 2 They get in addition, a naturally balanced feeding of minor elements, the vital impurities.

New Weather Knowledge To Be Told Lemon Men

Citrus growers are dependent on the weather. Cold may cause losses from frozen fruit and trees; hot weather may cause fruit drop or damage in pest control operations; rains may cause fruit rot. There is not much the grower can do to change the weather, but with advance knowledge of what may be expected, much can be done to minimize the effects of the weather.

Dr. Irving Krick of the Guggenheim Aeronautical Laboratory at California Institute of Technology, has developed a method of advance weather predicting that has been almost phenomenal in its accuracy. He is to tell of this work at the meeting of the Lemon Men's Club in the Sunkist Building, Los Angeles, on Oct. 7. Title of Dr. Krick's talk will be "An Application of Modern Methods of Weather Predicting to the Citrus Industry." That should be enough to pique the interest of every citrus man and bring him in to the city for the meeting. It's an interesting subject and Dr. Krick is an interesting speaker so make it a point to be present. All growers are cordially invited.

the rainy season. The dosage should be 20 cc vaporized gas.

Red Spider

In spite of the protracted hot summer, red spider has continued with "ups and downs" and is still more or less persistent in most districts. Where spider is to be found at this time of year, a few weeks of favorable weather might easily result in a heavy increase. The problem of treatment in the immediate future will be confined to fumigated or untreated

orchards. Experience shows that it is extremely important, especially in the interior which is subject to drying winds, to treat prior to a heavy build-up.

Where oil is to be used in the regular scale program, this will also care for the spider; but it might be necessary to advance the time of treatment should the spider become of immediate concern. * * *

On the Use of Emulsive Oils

There is one phase in the use of emulsive oils that has not been sufficiently emphasized. That is, thorough mixing in the spray tank. In using emulsive oils, the correct amount of oil should be placed in the tank with a small amount of water and passed through the pump until thoroughly emulsified before the filling of the tank is completed. If this is not done, free oil is often found floating on the surface of the water, resulting in a poor "mixture."

1111

Edison Orange Growers Packing Home Addition Being Built

Work has started on an addition to the orange packing house owned by the Edison Orange Growers Association at Edison, Kern county. Plans and specifications were prepared by Herbert A. Hamm of Pasadena, who will also supervise the construction work for the owner. The addition is 30x124 feet in size, and it will be insulated throughout. It will be used for coloring and storing the fruit, and will be air conditioned.

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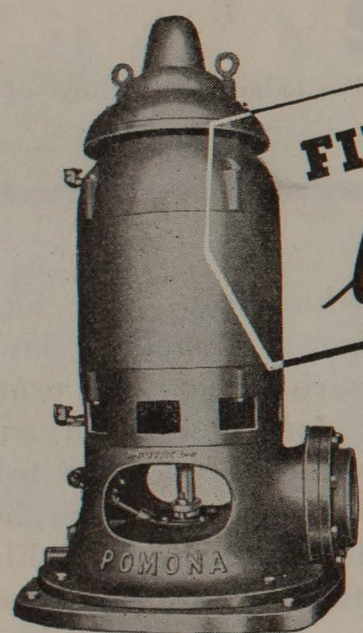


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POMONA
TURBINE PUMPS

Grapefruit Maturity

Continued from Page 462

gravelly soil which received a minimum amount of water.

A study of 12 samples taken before and after irrigation during September and October indicates that the ratio increases at a rate slightly above normal and the percentage juice increases only slightly or in some instances decreases.

An analysis of the fruit of the same size on an individual tree reveals considerable variation in ratio and percent juice due to the position of the fruit on the tree.

A brief study of the specific gravity of peeled fruit shows only slight difference between early fall and mid-winter samples. Samples tested in late September had a specific gravity of .983, compared to .979 in December.

SUMMARY

1. When the sugar-acid ratio of 6:1 is reached during the rapid rise in early fall, the fruit has attained approximately 75% of its maximum juice content.
2. The maximum ratio which is attained in the early fall appears to be influenced by conditions prior to the ripening season.
3. The ratio does not increase to a marked degree when the mean temperature is below 55°.
4. Ripening as indicated by ratio is due to the decrease in the acid of the fruit.
5. Total soluble solids increase slightly during the midwinter and decrease in the late spring.
6. When the maximum juice content was reached, the ratio varied from 5.3:1 to 1.1:1 in the ten groves studied.
7. The percent juice increases rapidly and uniformly during the early fall until 90% of the maximum juice content is reached. After this approximately a six-week period is required to attain the maximum juice content.
8. Certain evidence would indicate

an inverse correlation between percent juice and ratio. As sufficient data are not available at present to determine these limits, tests will be required over a period of years.

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Monte Vista Ass'n. Erecting Air Conditioned Addition

The Monte Vista Citrus Association of Riverside will begin the immediate construction of a \$30,000 addition to its present citrus packing plant on the corner of Pachappa and Fourth streets in that city. The new addition will be used primarily for the proper handling and storage of grapefruit. Winter grapefruit from the Coachella and Imperial Valleys and local grapefruit will be featured. The new building, with full basement, will be equipped with a modern air-conditioning plant and will provide storage capacity for 50 car-loads. Contract for the construction of the new building has been let to the firm of Cresmer & Entman. Its dimensions will be 110 by 85 feet with 12 feet clearing in basement.

Mr. Hagen, manager of the Monte Vista Citrus Association, states that increased facilities are required to take care of the increase in business of the Association, and that the past several years of research work pertaining to the proper handling of grapefruit has demonstrated conclusively that new and more modern equipment is necessary in order to render the grower a better service and obtain for him maximum results.

Other officers of the Monte Vista Citrus Association are: President, F. M. Reed; Vice President S. L. Herrick; Secretary R. A. Schirmer.

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BY PEGGY JEANS

Choose Vegetables for Quality

WHAT constitutes quality in artichokes? This and other helpful answers to questions on how to judge certain of the newer vegetables now coming into an increasing popularity in California, are given in a bulletin issued by the state department of agriculture at Sacramento.

Immature buds, according to this report, are better artichokes, the blunt nosed and compact buds being better than buds that are pointed or loose. When the artichoke is open or spreading with fuzzy center of a dark pink or purple color, and the tips of the scales are hard, over-maturity is indicated. Such an artichoke when cooked, is strong in flavor and the scales are tough and woody. A compact, heavy, globular, plump globe or French artichoke, which yields slightly to pressure, and which has large, tightly clinging, fleshy leaf scales of a good green color, is the most desirable. Green color indicates freshness, a brownish color shows age or injury, such as bruising or frosting. Bruises appear as dark discolored areas at the point of injury and are sometimes covered with mold. Discolored artichokes will turn black when cooked. Another injury difficult to detect is caused by worms. This injury occurs mainly at the base of the bud and may appear very small, although extending deeply into the heart. Artichokes affected by any of these injuries are not desirable unless they can be trimmed without much waste. Size is not important as far as quality and flavor go.

Italian sprouting broccoli, another of the newer vegetables, to be judged of good quality should be fresh, clean and not over-mature, with tender, firm stalks and compact buds in the clusters or heads. The general color should be either dark green or purplish green, depending upon variety. Yellowed or damaged leaves should be carefully examined and tested for tenderness. The whole stalk (comprising stem, leaves and flower clusters) is eaten and must, therefore, be tender. Overmature sprouting broccoli usually is woody, tough or stringy. It is indicated by bud clusters which are open to show the full yellow or purple color of the blossom, although an occasional open blossom does not indicate over maturity. Wilted, flabby broccoli should be avoided.

In choosing chicory, one of the newer salad greens, crispness, freshness and tenderness are essential. Wilted plants may be freshened in water but may be wasteful and should be examined for decay, which shows as browning of the leaves or as a slimy rot. Tough, coarse-leaved plants are likely to be too bitter and

are undesirable. Breaking or twisting a leaf will show toughness or tenderness. If unbleached, the leaves should be green. When blanched, the center leaves of chicory should be creamy white, or for the chicory sold as Witloof chicory or French or Belgian endive, the whole head should be creamy white and will form an almost solid, elongated head, as contrasted to the more open head of the unblanched chicory.

Good quality of romaine, also called cos lettuce, is young, compact, not overgrown, coarse or spread. The outer leaves are green, the heart somewhat blanched. This plant has the advantage of being obtainable when head lettuce is not so good.

Zucchini, another favorite among newer vegetables, is preferable when of intermediate size. The smaller sizes of this squash are inclined to be watery, the larger ones seedy.

Menus For Hallowe'en Events

GHOSTS! goblins! black cats and owls! the magic eve of Hallowe'en approaches and we find ourselves willingly bewitched, not by Tam o' Shanter's Satanic revelers but by the mirthful spirit of party-making. It's always fun to give a party but it's very special fun to give a Hallowe'en party, with its opportunities for weird and spooky decorations, ghostly costumes, and games of fortune-telling and surprise. Too, there are its foods and potions of magic names and charms, for the fun of Hallowe'en can be woven into menus that suit all types of guests and occasions.

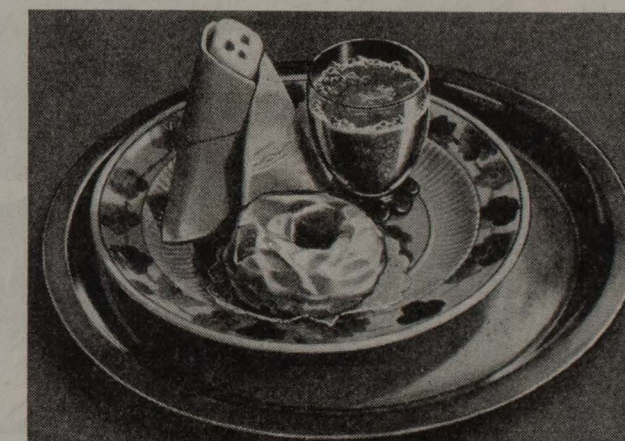


Orange Cheese Salad for a Hallowe'en

Buffet Supper. Note the table decorations of colorful autumn leaves and Jack o' Lantern centerpiece.

Hallowe'en Buffet Supper

Here, for example, is a buffet supper in two courses that's neither elaborate nor expensive but that carries out the traditional orange and black color motif of Hallowe'en in an interesting way and is very good to eat.



This Hallowe'en Snack furnishes an Orange Frosted Doughnut, a glass of Hot Fruit Punch, and a ghost that vanishes.

Spread one slice with cottage cheese beaten to a cream, the other with jelly.
Individual Pumpkin Pies: Put the pumpkin pie filling into pastry shells. These may be made in individual glass pie plates. Top pumpkin filling with sweetened whipped cream, sprinkled with a dash of nutmeg. Or serve a la mode with a topping of vanilla ice cream.

Hallowe'en Snack

This is a simple combination that again carries out the Hallowe'en colors and that may be easily served to a large crowd, such as a school party, a harvest festival or a church social.

Orange Frosted Doughnut
Hot Cider or Hot Fruit Punch
Vanishing Ghosts

Orange Frosted Doughnuts: Cover cake doughnuts with frosting made by beating together well: 3 tablespoons creamed butter, 2 cups powdered sugar, 2 tablespoons lemon juice, 2 tablespoons orange juice, 1 teaspoon grated orange rind, and orange coloring to give an orange shade.

Hot Fruit Punch: Combine the juice of 6 lemons, 1 cup orange juice, 2 cups grape juice, 1 cup sugar and 6 cups boiling water. Put in a kettle and heat on stove but do not boil. Will serve 10 to 12. To serve more, double or treble recipe amounts.

Vanishing Ghosts: Pin a white paper napkin around a marshmallow on which a skeleton face has been drawn with red food coloring. Stand ghost up on plate or tray with the Orange Frosted Doughnut and glass of Hot Fruit Punch or Cider. The guest unpins the napkin and uses it in its original role. The "ghost" is dropped into the hot beverage where it dissolves and vanishes.

The Friend Who Goes Ahead

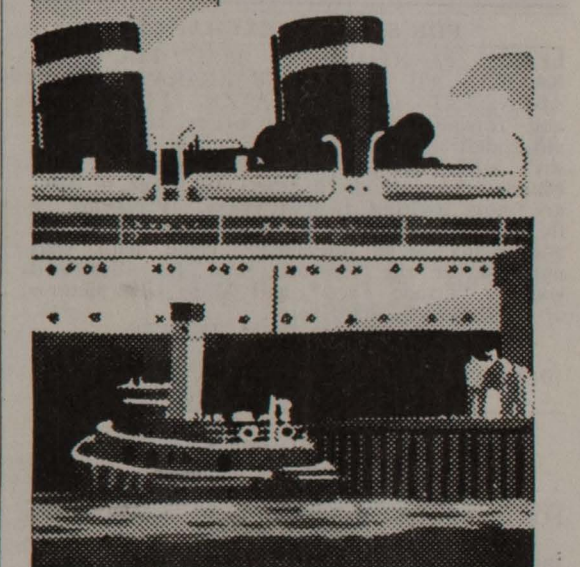
SAD news has come to us. One whom we loved for her bright, rich spirit, her gift of charm, of bringing friendly interest to others, has laid aside a tired body and slipped away from us. We are sorry—not for her, but for her family and for ourselves, and the other friends she leaves behind. She lived her life fully, had much of what she desired, gave so much to others in love and friendship that they in turn gave her abundantly of these treasures. Wherever she has gone we know

Continued on Page 494

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CITRUS TREES for immediate and future delivery. Fine one and two-year-old trees on sweet, rough lemon, pomelo and sour stock as you may prefer. We solicit your requirements. Take advantage of our special prices for early orders.

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H. G. CHASE REAL ESTATE Sales Managers of Hope Ranch 1012 State St. Santa Barbara, Calif. Courtesies to Brokers

SELECT GROVES AND RANCHES Consult A. F. YAGGY, 385 E. Green St., Pasadena

FOR SALE—The Palm Hut Realty, trucks, equipment, business. Wholesale citrus and citrus juice. \$20,000 cash. Palm Hut, Rt. 1, Box 700, Palo Alto, Calif.

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USED Heat-Controlled Coke Heaters—filled, for San Fernando Ranch. L. Keeney, Azusa, Calif.

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PIPE, slightly used, like new, 1" 5/8 ft.; 1 1/4" 6 1/2 ft.; 1 1/2" 7 1/2 ft.; 2" 8 ft. and 10 ft. and larger sizes, 4" O. D. 12 ft. Also irrigation pipe.

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ROLLS DEVELOPED—Two beautiful double weight professional enlargements and 8 guaranteed never fade, perfect tone prints. 25c coin. Rays Photo Service, La Crosse, Wis.

To Control Winter-Summer Temperatures in New Plant

Construction is well under way for the new air conditioned lemon storage building which the Sierra Madre-Lamanda Citrus Association is erecting at 150 North Vinedo avenue, Pasadena.

The building is 72x100 feet in area, with an elevator and stair vestibule 24'x27' 1/2", all three stories in height. There will be a concrete structure adjoining on the north, 14'-0" x 32'-0", in which will be housed the transformer vault, refrigerating and air conditioning equipment.

This plant will be unique inasmuch as it will be equipped to maintain a fixed temperature against winter temperatures as well as against summer temperatures. It has been found from practical experience that too low temperatures during the winter months cause a bronzing of the fruit stored, and the winter control will prevent this condition.

The refrigerating contract has been let to the Gay Engineering Co. of Los Angeles. The excavating contract was awarded to the Ted Ducey Excavating Co. of Pasadena.

The plans and specifications were prepared by Engineer Herbert A. Hamm of Pasadena, who will also supervise the construction and installation of all of the mechanical equipment. The total cost of the work is estimated to be \$45,000. Frank G. Webber is general manager for the association.

Home and Household Continued from Page 493

that she will continue her happy adventure of living. She will be interested, will find ways of helping, perhaps will even be with us, loving us and sympathizing with our activities, although we do not know it. That is our sorrow, we shall not know it. We shall miss her physical presence, her gay words and thoughtful acts of kindness. We know that she did not go away afraid, for she believed that life must go on, is eternal. We, too, know and believe that. But we shall miss her and we send sympathy to all the others, who have known her and who will miss her, too. We are sending flowers. But more than that, we shall try to remember and sometimes give another flower to her memory in doing a kindness as she would have done it.

A Book to Read

THIS page carries few book reviews but there's one book of the day that no one should miss. "Man, the Unknown," by Dr. Alexis Carrell (Harper and Brothers, Publishers, New York, 1935), does indeed, as the author states in his preface, put at the disposal of everyone an ensemble of what is known by science concerning that most mysterious of all beings—man, the human being. It summarizes the results of years of the research of the foremost scientists of our times in language understandable and interesting to the layman. Reading it, one gains a widened and valuable education as to the structure and functions of the human body and the psychology of the mind. The book stimulates thought with its query as to what confronts mankind next and the fate of our current civilization. It is to be especially recommended to mothers and others who have the training of children in their charge.

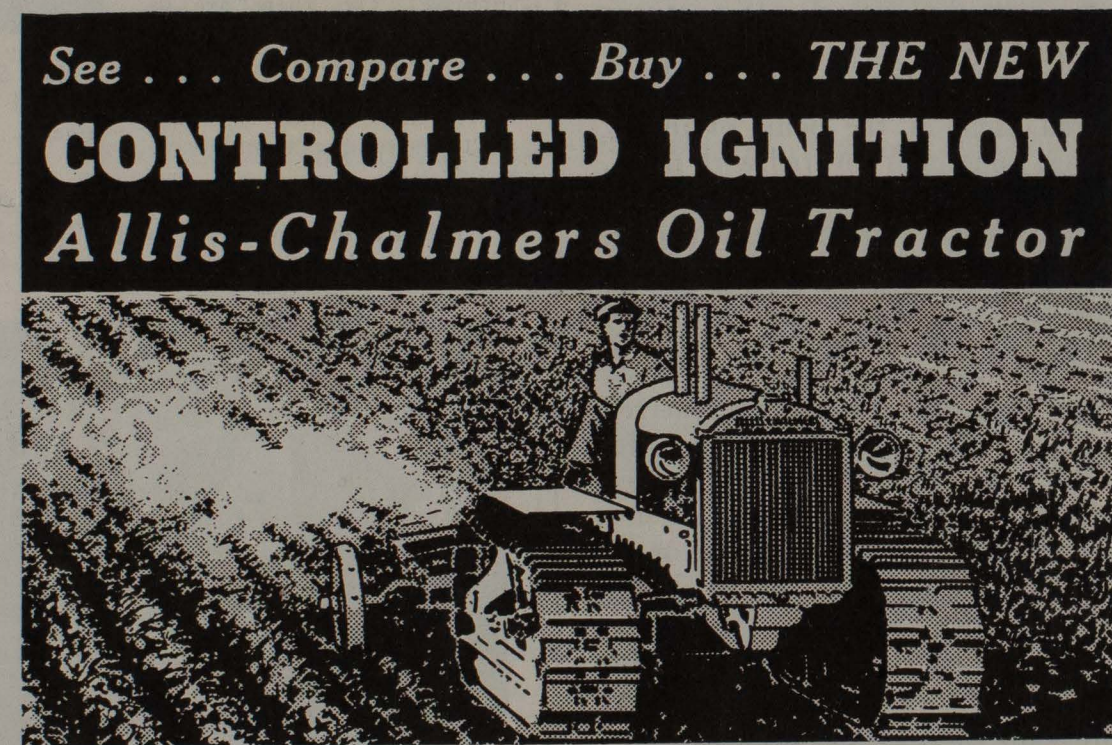
Date Palm Scale Quarantine Revoked

The apparent eradication of the date-palm scale has led Secretary of Agriculture Wallace to revoke the Federal date palm scale quarantine effective July 1, 1936.

terious of all beings—man, the human being. It summarizes the results of years of the research of the foremost scientists of our times in language understandable and interesting to the layman. Reading it, one gains a widened and valuable education as to the structure and functions of the human body and the psychology of the mind. The book stimulates thought with its query as to what confronts mankind next and the fate of our current civilization. It is to be especially recommended to mothers and others who have the training of children in their charge. Dr. Carrell, author of the book, is a scientist of international reputation and one of the world's most noted surgeons. He is a winner of the Nobel Prize and a member of the research staff of the Rockefeller Institute. If your local library does not have this book, it would be well to see that it goes onto the shelves. It is an interesting book, too, for club study or discussion.

KEY TO INDEX, VOLUME 21

Table with 4 columns: Page, Issue, Page, Issue. Lists various articles and their corresponding page and issue numbers.



Control Means - Instant Starting, Smoother Performance, Better Balance, Longer Life

Now you can profit from using low cost Diesel fuel oil . . . and still enjoy the advantages of controlled, instant starting; light weight; smooth operation and minimum upkeep. Allis-Chalmers Controlled Ignition Oil Tractors do not depend on high compression pressures for ignition. Instead . . . Diesel fuel oil is sprayed (not squirted) into the combustion chamber at a controlled point . . . and ignited with a spark. No excessive pressures to cause strain, vibration and wear. No chance of power-wasting pre-ignition. No need of special rings, special high-pressure bearings, special lubricating oil or heat reservoirs in the combustion chamber. See the new fuel pump of A-C design—so simple anyone can service it. Specially designed injection system that assures a controlled air-fuel ratio at all engine speeds. Test the ease of starting—hand crank or electric starter. Avoid the extra weight and upkeep of an auxiliary starting motor. Compare before you buy. FREE catalog—send coupon.

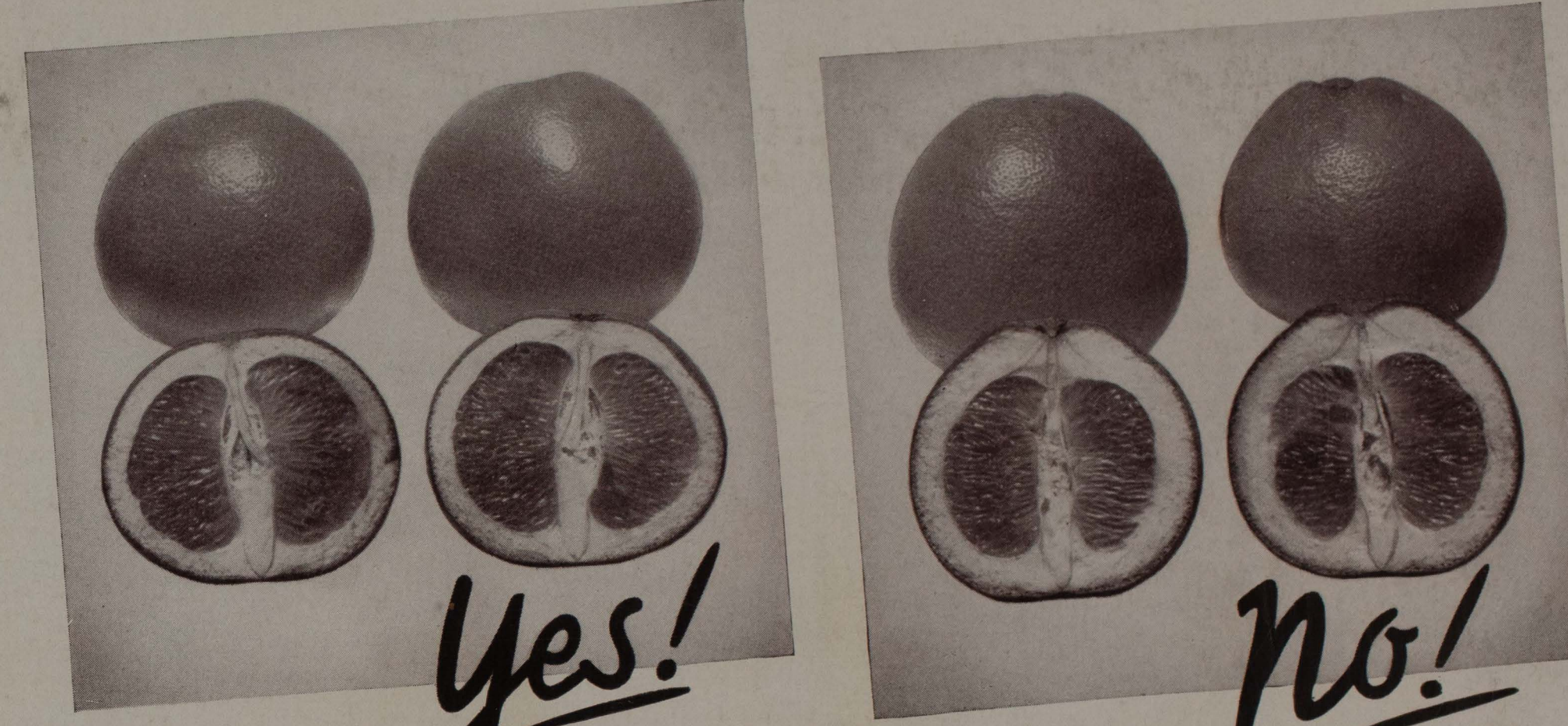
ALLIS-CHALMERS TRACTOR DIVISION—MILWAUKEE, U. S. A. Includes contact information for factory branch in Oakland, California.

Main index table for Volume 21, listing articles and their page numbers. Includes sections for 'KEY TO INDEX, VOLUME 21' and a detailed list of articles.

INDEX TO VOLUME 21—November, 1935 to October, 1936, Inc.—Continued

Table listing various articles and their authors, organized by letter (L, N, O, P, M, R, S, T, W-Y-Z). Includes entries like 'Labor: Associated Farmers Calif. Formed for Mutual Protection', 'National Orange Show: Expected Attract Thousands Visitors', 'Prizer, J. A.—Problems of Citrus Grows', etc.

Do these fruits have Inside Quality?



YOUR FERTILIZER MAN IS YOUR FRIEND

Manufacturers of mixed fertilizer in California have made a careful study of the fertilizer practices of leading citrus growers who produce top quality fruit year after year. Your fertilizer man is vitally interested in helping you to produce fruit that tops the market.

From Regular Feeding With NV SULPHATE of POTASH.

THE PROOF OF THE FRUIT IS IN THE EATING! The size, shape, color, weight and general outside appearance of citrus fruits may be important to marketing, but it's the inside quality that influences the consumer's final judgment.

The grapefruits pictured above are typical specimens from young plantings in two adjoining plots of 36 trees each. Both plots received green manure and nitrogen and exactly the same treatment except that the plot from which the two fruits at left were taken received NV SULPHATE of POTASH each year for three years.

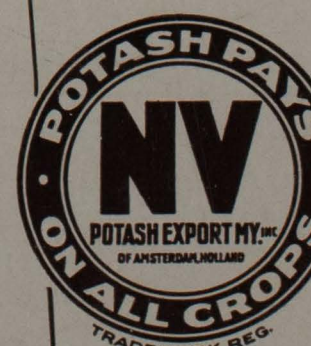
Note the well-rounded shapes and the smooth rinds of the potash-fed fruits. Observe their excellent inside quality—the thin,

From Unbalanced Feeding With Only Nitrogen and Green Manure.

tough rinds and the superior inner texture. If you could eat these fruits you would taste an even greater quality difference than the photographs indicate.

The potash-starved fruits at right are coarse, spongy and over-sized. They show their poorest quality after their thick peels are removed—poor texture and a small content of thin juice of insipid flavor.

If you want your citrus fruit to have the outside quality that catches the consumer's eye and the inside quality that pleases his palate—START NOW to feed your trees regularly with NV SULPHATE of POTASH. Use four pounds per tree. Or, give each tree 20 pounds of balanced fertilizer containing 10% potash, derived from genuine NV SULPHATE of POTASH. It Pays!



Sulphate of Potash Builds Better Fruit

Agents: WILSON & GEO. MEYER & CO., Federal Reserve Bank Bldg., SAN FRANCISCO



● THE GROVE

THE PEST ●

The proper control of red scale presents a major problem to the citrus industry.

Experience—throughout the years—shows that citrus groves properly *fumigated*, mean clean, bright, marketable fruit—and trees with the vitality to produce large crops.

Therefore, along with thousands of successful citrus growers—we give you—

THE ANSWER ●

Fumigate!

IT LEAVES
NO INJURIOUS RESIDUE



AMERICAN CYANAMID & CHEMICAL CORPORATION

Azusa, California

Manufacturers of Hydrocyanic Acid Gas and Equipment for its Application

Arrange to have your grove inspected now—and regularly. Then fumigate when scale is in proper stage of development for best results.

Write us about your scale problem—whether it be red, black, yellow, purple, or citricola scale or all of them. Our Field Staff will gladly help you.