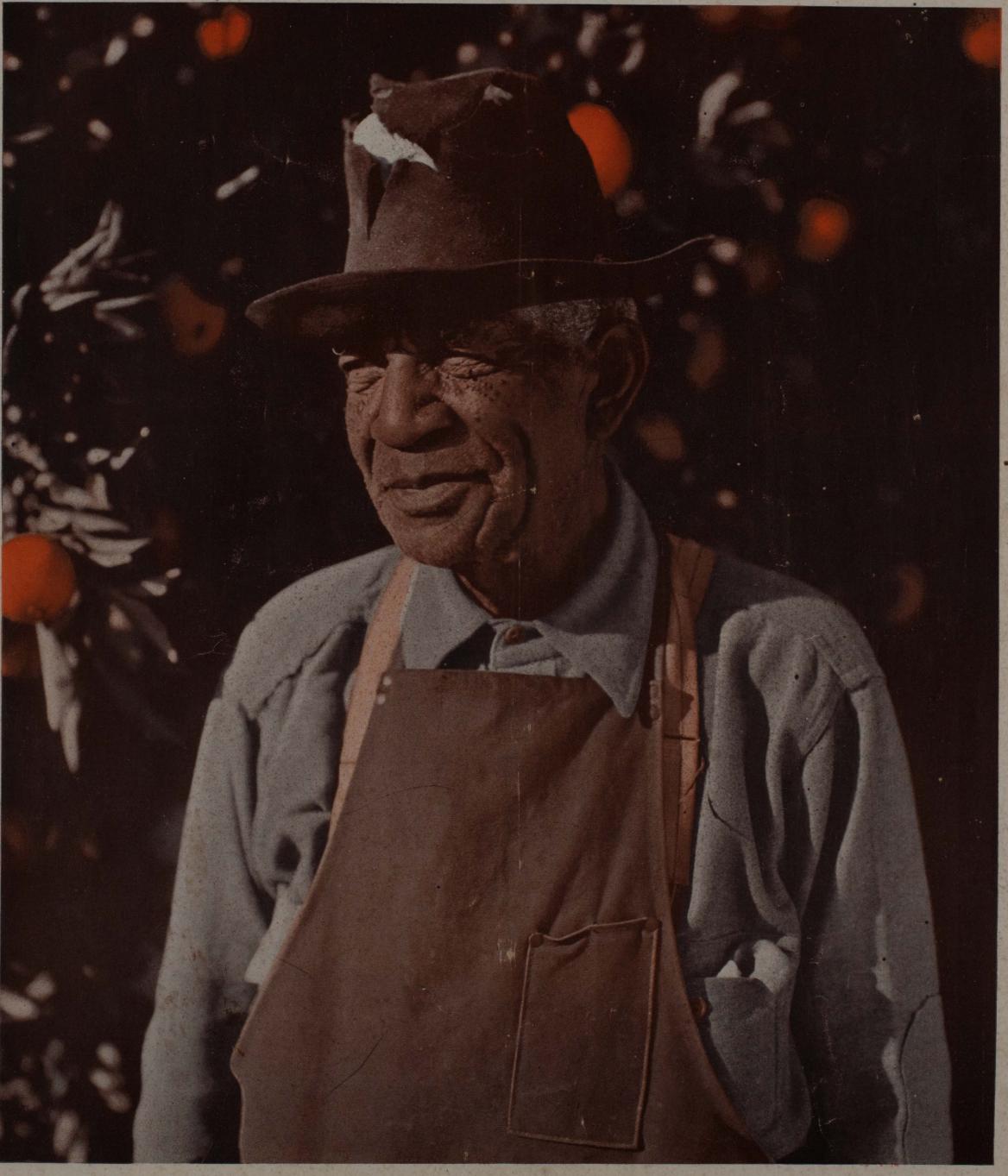
THE CENTS A COPY THE CENTS A



Faithful Citrus Worker in One Family's Service 52 Years

PUBLICATION OFFICE 1118 Story Bldg., Los Angeles

Issued monthly by California Citrograph Publishing Co., Ltd., 1118 Story Bldg., 610 So. Broadway, Los Angeles, California, U. S. A.

Editor and Manager, E. A. STREET Advertising Manager, O. K. GREENE Associate Editor, D. J. THOMPSON

San Francisco Representative EDWARD S. TOWNSEND Co. 1548 Russ Bldg.



Title Copyrighted and Registered in U.S. Patent Office. Established 1915

Subscription rates—payable in advance
In the U. S. and possessions \$1 a year: 10c a copy. In Argentina, Brazil, Bolivia, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Haiti, Mexico, Nicaragua, Panama, Paraguay, Peru, Honduras, Salvador, Spain, Uruguay, Venezuela, \$1.50 a year. South Africa, Japan, England, Australia, New Zealand, China, Palestine, Egypt, Italy, Morocco and all other countries not listed above \$2 a year. Remittances from outside the U. S. by postal, international or express money orders, or by drafts payable in U. S. funds. Postage charged for back copies, and a premium for those older than one year.

VOL. 21, NO. 12 Entered as Second Class matter at Post Office of Los Angeles, California, March 1, 1918, under Act of March 3, 1879.

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 elswhere 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

TABLE OF CONTENTS

Granulated and Frozen Valencia Oranges-

Young	458
How to Improve Quality Citrus Fruit We Grow and Ship—A Symposium in 5 Parts: Part 3 — Viewpoint of Plant Pathologist—H. S. Fawcett	459
Pruning Studies with Washington Navel Orange Trees—A. D. Shamel and C. S. Pomeroy	460
Riverside Grower with Keen Interest in Early Records of Citrus Growing	461
Grapefruit Maturity Studies in the Salt River Valley—R. H. Hilgeman	
Sunkist Courier Department	-400
Haas	467
Lemon Men's Club Members Insect Pest and Plant Disease Interceptions	472
Recorded by State Santa Paula Orange Association and Rancho Sespe Constructing Packing	480
Plants	482
Timely Information on Insect Pest Situation in Southern California	
INDEX TO VOLUME 21	495

Southern Editor to Negro Farmers

The CALIFORNIA CITROGRAPH

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."

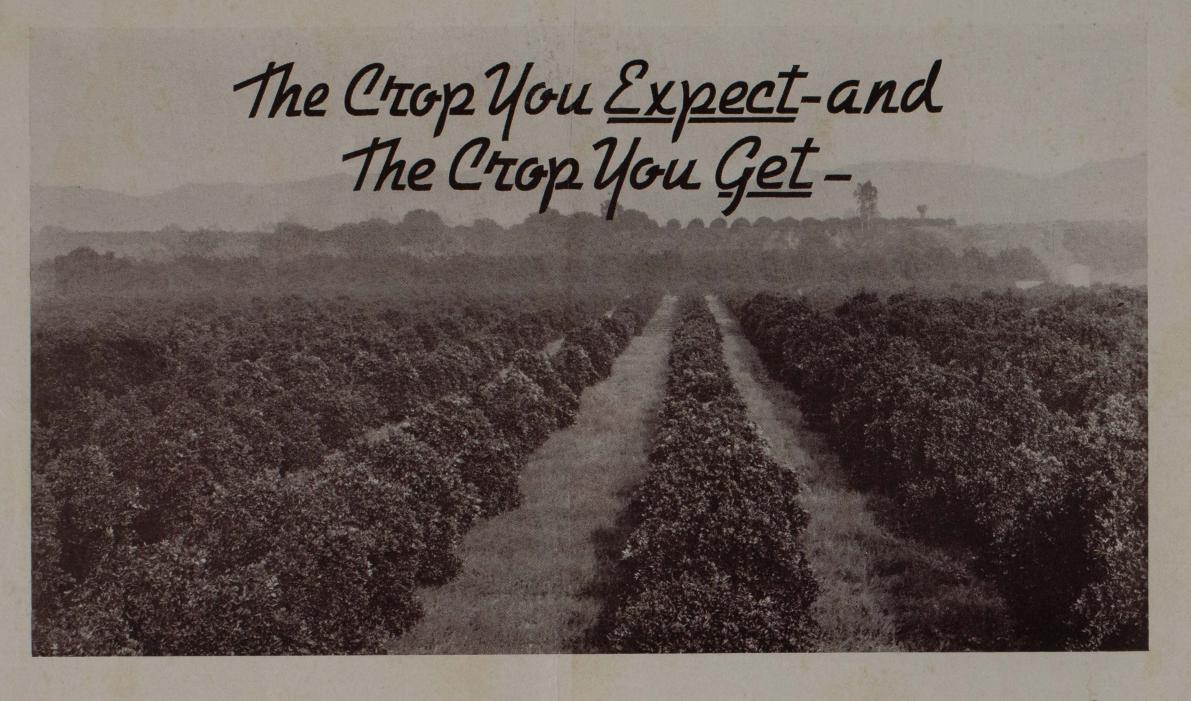
Concluding, Director Cobb declared: "The problems of the white farmer and the colored farmer are the same problems. A policy which helps one helps the other. There is no place for race prejudice in any national program for the welfare of agriculture."

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,



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.

The R. & H. Chemicals Dept. E. I. DU PONT DE NEMOURS & CO. INC.

PACIFIC DIVISION

FUMIGATE WITH

HYDRO-CY

Trade Mark



EL MONTE CALIFORNIA

NE of the lines of attack on the problem of granulation (crystallization) of Valencias has temperatures may be a factor in causing granulation and, if so, to what extent. The evidence obtained thus far is not sufficient to warrant the making of a definite statement, but the weather bureau and the Citrus Experiment station are collaborating

in an effort to obtain further data.

Although the problem of the relationship between low temperatures and granulation has not yet been solved, evidence in a related field has been obtained which appears to be of very great value to the growers. This evidence appears to indicate that a great deal of the trouble ascribed to granulation is apparently due to cold injury and as such may be greatly reduced or avoided through the use of heaters in the groves. Years ago we seldom heard mentioned the trouble we now call granulation. We considered that such fruit had been frozen and thought no more about it. Today we seem inclined to go to the opposite extreme and class all such trouble under the head of granulation. It appears now that whether or not low temperatures are a factor in producing granulation, we should make a distinction between granulated and cold-injured fruit. This is not always an easy matter because the same orange may be both granulated and frozen.

Injury resulting from low temperatures may or may not be easy to recognize. From our study of the problem thus far it appears that we may have to at least partially modify our ideas as to the characteristic appearance of a frozen fruit. At picking time a frozen orange is usually characterized as one in which a portion or all of the tissues in one or more of the segments have collapsed, and on which the peel, or a portion of it, may be toughened and somewhat off-color. Such characteristics might have been detected within a few weeks after the date of the freeze. This characterization is correct as far as it goes.

There appears, however, to be another type of cold injury which may not become evident in the truit until sometime during the summer or fall. The latter type of injury is characterized by areas which may be located in any portion of the pulp and in which the juice sacs have the grayish appearance of granulated juice sacs, but they are not so swollen and appear to be drier and more collapsed. It should be noted, however, that granulated sacs of the usual type may or may not be scattered here and there through the affected area.

The peel of such fruits may have some of the characteristics of that on fruits in which the segments have collapsed, but they are usually much less easily detected. One of the clues as to whether this type of cold injury is present is the fact that it appears in all sizes of fruit, whereas granulation is pronouncedly more abundant in the large than in the small sizes. This type of cold injury was especi-

Granulated and Frozen Valencia Oranges

been to determine whether or not low By E. T. Bartholomew and Walton B. Sinclair, Citrus Experiment Station, Riverside, Calif. and Floyd D. Young, U. S. Weather Bureau, Pomona, Calif.

> ing again in some localities this sea- 204%. What appears to be further son. Evidence that this kind of cold evidence in this line is the fact that injury produces some sort of physi- in 1932 it was found that grapeological upset which manifests itself fruit did not show the effect of cold in the fruit only after it has become injury for a considerable length of mature, may be indicated by the retime after the injury had occurred.2 sults of the test made by the Ex- True granulation is characterized change laboratory¹ in which it was by the juice sacs becoming grayish found that this type of trouble pro- in color, hardened, and often somegressed while the fruit was in stor- what enlarged. The trouble usually age. Under the conditions of the begins at the stem end of the pulp tests the amount of progress of the and progresses toward the stylar end. trouble in the stem end was only In some cases there is a deviation

1. California Fruit Growers Exchange, Field Department Circular No. 359. August, 1935.

ally abundant last season and is show- 27% while in the stylar end it was

from the characteristic, in so far as

2. The California Citrograph 17:248, 1932.

THIS MONTH'S COVER

The subject of our little sketch,

Milford J. Thomas, was born near

Berryville, Clark county, Virginia,

in 1870. His father and mother

were slaves on the farm of Frank

McCormick, brother of Cyrus Hall

McCormick, inventor of the reaper.

While Frank McCormick used

slaves that he inherited on his

farm, he never bought nor sold one

and was opposed to the institution

When young Thomas was 14

years of age he left Virginia and

traveled north looking for work in

order to help take care of his age-

ing parents. On October 3, 1884,

he began work as a coachman for

C. E. Rumsey of Pittsburgh, Penn.,

and continued in that service until

he came to Riverside, California.

in 1903. In Riverside he continued

to work for Mr. Rumsey until his

employer died in 1911. Since then

he has worked for the Bonnett family on Mr. Rumsey's "Alta Cresta"

grove that was described in the

Milford and his wife live in a

neat, comfortable home at 2843 E.

10th street, Riverside. He drives

his faithful horse hitched to an old-

fashioned buggy back and forth to

his work on the Alta Cresta Groves,

a distance of about four miles. This

group travelling along Victoria

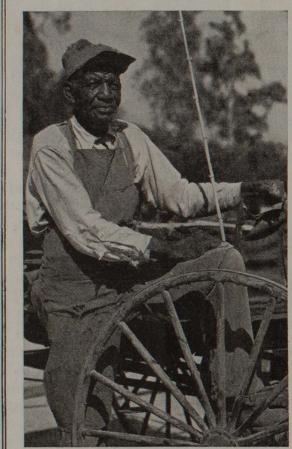
avenue every morning and evening

is one of the most picturesque and

interesting sights in the community.

The fine, calm, kindly face of this

Citrograph for May, 1936.



Characteristic pose of Milford J. Thomas, the subject of the photographic study on the front cover of this issue. He and his horse-drawn buggy have been familiar to the residents of Riverside for a long term of years. This man has been in the service of the Rumsey and Bonnett families for 52 years—a loyal and valued employe. Photo

by Field Studios, Riverside.

faithful servant, who has worked continuously for the Rumsey and Bonnett families for 52 years is worthy of an artist's study.

This friendly, conscientious man is a credit to his race, or to any race for that matter. He helped Mr. Rumsey plant his orange grove, and the shade trees and ornamental plantings nearby on Victoria Heights along Victoria avenue, now one of the most beautiful districts of Riverside. At the present time he spends a great deal of his time in pruning the orange trees in the Alta Cresta groves, as was the case recently when the writer with Avery Edwin Field visited him in order to obtain his picture for the Citrograph.

It seems appropriate in this connection to quote the lines of appreciation for the late George A. Green, noted horticulturist, that were published in the official report of the New Zealand Horticultural Trades Association, March 3, 1936, because they express so true an estimate of a man's real worth regardless of race or creed, or condition of servitude:

> Not-"How did he die?" but, "How did he live?" Not-"What did he gain?" but, "What aid did he give?" These are the units to measure the worth, Of a man as a man, regardless of birth.

Not-"What was his station?" but, "Had he a heart?" And—"How did he play his God-given part?" "Was he ever ready with word of good cheer,

"To bring back a smile or banish a tear?"

Not-"What was his Church?" or "What was his creed" But—"Had he befriended those really in need?" Not—"What did the sketch in the newspaper say?" But—"How many were sorry, when he passed away?"

the point of origin is concerned. In oranges where granulation is not severe, it may be found in a limited area about a fourth of the way in from the stem end or at a similar distance from the stylar end. Such areas are always located in the inner edges of the pulp segments, around the central axis of the fruit, and not out in the middle or near the peel. The granulated juice sacs do not usually begin to collapse until late in the picking season and may not do so even then. The peel of the granulated fruit is not shrunken or tough-As our experimental work prog-

resses our present ideas concerning the differences between granulation and cold injury may have to be modified or even entirely changed.

Our object in writing this article is twofold: first, to get growers, field foremen, and packing-house men interested in trying to help to determine whether we are right in our preliminary findings that there may be three types of injury, namely: (a) true granulation, (b), cold injury to the extent that a portion or all of one or more fruit segments may be collapsed at time of picking, and (c) cold injury that does not become evident until summer or fall and which may be found generally all through the fruit or in localized areas in any portion of it. The second object is to interest more growers in heating their groves and to get those who have heaters to keep the grove temperature a little higher to see if much of the trouble now ascribed to granulation cannot be prevented. From the evidence already at hand we believe that it can be done.

Another Reason Inspectors Can't Take Motorists' Word

Out-of-state motorists stopped at state plant quarantine stations, who are puzzled as to why the inspectors won't take their word that they have no plant materials in their automobiles, are respectfully referred by A. C. Fleury, chief of the division of plant quarantine, state department of agriculture, to the "\$10 per leaf" case which occurred recently at the Blythe quarantine sta-

The persons concerned were two Ohio women who were stopped for the usual inspection of their vehicle for plant materials that might be infested with dangerous insect pests not found in California. They protested vigorously that they had no plant materials of any kind and offered to pay Inspector Jesse H. Pritchett \$10 per leaf if he could find any in their

Declining to accept the offer, Inspector Pritchett proceeded to do his duty. In a trunk on the rear of the automobile he found two large stalks of cotton brought from Texas. The bolls attached were found to be infested with live pupae of the cotton boll weevil. At \$10 per leaf, the discovery would have cost the women \$500. The women were not asked

California has been successful so far in keeping the cotton boll weevil out of this state. Mr. Fleury said the circumstances of the "\$10 per leaf" case graphically illustrated why the word of travelers, regardless of how sincere they may be, cannot be accepted when they declare they have no plant materials.

How to Improve the Quality of Citrus Fruit We Grow and Ship—a Symposium

October, Nineteen Thirty-six

F THE many conditions that

of certain diseases is an important fac-

tor to be considered. In its broader

and the effects of environmental con-

ditions, as well as derangements due

sense, diseases may determine to some

extent the appearance quality, keep-

ing quality, and eating quality of

Under California conditions, ap-

pearance quality may be influenced

by diseases such as exanthema, psor-

osis, mottle-leaf, septoria spot, black

pit, anthracnose spot, water spot,

oleocellosis, and red blotch. If we

include spots and markings due to

spraying, fumigation, and wind in-

juries, frost and sunburning, the pos-

sible cases are increased. A number

of these are beyond the grower's di-

rect commercial control, but some-

thing definite can be done about

Exanthema impairs not only the

external appearance, but also tends

to produce gum in the angles between

the fruit segments at the center. This

condition is usually remedied by the

use of a copper spray, such as bor-

deaux mixture, equivalent to a

mixture of about 6 pounds of cop-

per sulfate, with 4 pounds of lime to

100 gallons of water, just before or

during the spring flush of growth.

However, this practice cannot safely

be followed by cyanide fumigation

citrus.

to the attacks of organisms; in this

enter into the commercial qual-

ity of citrus fruits, the absence

In Five Parts—Part 3

By Howard S. Fawcett, Citrus Experiment Station, University of California

Viewpoint of the Plant Pathologist

usage, the term disease includes the ities on grapefruit, that with our ing and alternaria rot in lemon stor-

spot, black pit, and water rot de- mental work is under way by the

results of physiological disturbances present information no regular yearly age. With our present knowledge no commercial practice can be set down. immediate remedy for prevention of Anthracnose spot, Valencia rind granulation can be stated but experi-

> This, the third of the series in the symposium of views on how to improve the quality of citrus fruits, is prepared by the outstanding plant pathological authority on citrus fruits, Dr. Howard S. Fawcett. Dr. Fawcett has attained a world-wide reputation for his work on citrus diseases and is the author of that fine text book and growers' handbook, "Citrus Diseases and Their Control", the second and revised edition of which has but recently come off the press. He has been a world traveler in countries where citrus fruits are grown.

> Dr. Fawcett was born at Salem, Ohio, studied, and obtained his bachelor of science degree at Iowa State College in 1905. He took a master of science degree at the University of Florida in 1908; studied at Johns Hopkins university during 1917-1918, and received the doctor of philosophy degree there in 1918. He was accorded a fellowship at Johns Hopkins that year also

> The record of Dr. Fawcett's practical experience in horticulture is as follows: 1905-1906, assistant botanist and horticulturist at the University of Florida; 1907-1908, assistant plant pathologist at Florida Agricultural experiment station, and plant pathologist at that institution for four years thereafter. It was in 1912 and 1913 that Dr. Fawcett came to California and served as plant

> pathologist for the California horticultural commission. The following year he was made associate professor of plant pathology at the University of California. From 1918 to the present Dr. Fawcett has been professor of plant pathology for the University of California stationed at the Citrus Experiment station at Riverside.

This writer is a member of a great number of scientific and literary societies.

for about two years. The presence of psorosis (scaly bark) in a severe form influences quality in bringing about deterioration of the branches and small, coarse-skinned fruits. Occasionally on diseased trees a few fruits may be impaired by sunken ridges and

circular spots1. ity of citrus fruits, principally by bringing about weakened growth, and producing small-sized fruits. In ex- growth. treme cases a large percentage of the fruits will be pale, off-size and offshaped, and commercially worthless. A spray containing zinc corrects this avoided by picking the fruits care-

The keeping quality of oranges is often influenced by water spot and rot. These diseases are caused by prolonged wet weather, during which the rind takes up water through defects in the cuticle of the mature fruit². Such conditions are for the most part beyond the grower's control. Oil sprays applied late in the season or with unsatisfactory concentrations of oil may contribute to the severity, but are not the whole cause melanose, may be important factors of the trouble.

Septoria spot is so variable from season to season and usually so minor in California, except in certain local- of fruit formation.

¹Fawcett, H. S. Citrus Diseases and Their Control. McGraw-Hill Book Company, 1936. ²Fawcett, H. S., L. J. Klotz, and A. R. C. Haas. California Citrograph 18:165, 175, 1933. Eberling, Walter, and L. J. Klotz. Mo. Bul. State Dept. Agr. (In press).

out of the commercial grades. of high vitality and by maintaining

Sunburning, frost, spray injuries, and cyanide fumigation injuries all tend to impair the quality of fruit. These should be avoided as far as possible. Some control over cyanide fumigation and spray injuries can be exercised by avoiding the weather conditions under which such injuries occur, but some of it ap-Mottle-leaf also lowers the qual- pears to be unpredictable because of sudden variations in sets of conditions in temperature, humidity, and

Oleocellosis or rind oil spotting is important in influencing appearance and keeping quality and is largely fully and only when thoroughly dry and not too soon after rains. Turgid, wet fruits give up their rind oil with very slight pressure in handling and this oil on the surface results in much

Red blotch of lemons in storage impairs appearance and keeping quality. It is aggravated by low temperacuring with ethylene gas.

Other diseases, such as scab and in appearance quality only in Florida and in other sections where there are

have to do with keeping and eating quality are those such as granulations in Valencia oranges, and membraneous stain, hollow core, albedo brown
4Fawcett, H. S., L. J. Klotz, and H. W. Nixon.
California Citrograph 21:118, 143, 144. 1936.

pend on unpredictable and often sud- Citrus Experiment station³, to deden changes in weather conditions, termine if any treatment is possible and no economical method of pre- and if strains may be selected for venting them has been found. In cases future propagation that are resistant where no practicable methods of con- to this physiological condition. The trol can be used the only recourse degree of alternaria rot in lemons is to keep diseased or injured fruit may be influenced by growing fruits



tures, by immaturity and by forced Scaly bark on orange tree. Illustration by courtesy Citrus Experiment Station.

optimum conditions of temperature, nation's feed crops, the total supply humidity, and air renewal in storage'.

When membraneous stain in lemon commercial quality of lemons by mak-

⁸Bartholomew, E. T., W. B. Sinclair, and E. C. Raby. California Citrograph 19:88-89, 106, 108, 1934, and 21:5, 30, 1935.

ering the resistance to decay. This may be largely prevented by avoiding temperatures of 50° and below and by maintaining good ventilation in long storage. The most favorable storage temperature for lemons is about 55° F. to 58°.

Endoxerosis or internal decline is another internal drying defect that influences quality and is partially related to water conditions, some of which may be prevented by proper cultural conditions; other phases of this trouble are beyond the grower's

Keeping quality is also greatly influenced by avoidance of various types of decay. Careful handling in picking and all the subsequent operations in the packing-house, proper storage conditions, and good transit conditions may have an influence on keeping quality.

To summarize, appearance quality under California conditions may be improved by prevention, as far as is practical, of such diseases as exanthema, psorosis, mottle-leaf, septoria spot, and oleocellosis. Keeping quality may be influenced by avoiding not only most of the diseases mentioned above but such diseases and defects as alternaria rot, oleocellosis, injuries of all kinds leading to decay, and by maintaining optimum conditions in storage and transit.

Eating quality may be influenced by avoiding such diseases as granulation, and internal decline.

When unpredictable or economically noncontrollable diseases or effects occur, heavy culling and segregation in lower grades may be necessary to maintain the commercial grades of high quality in all these three aspects: appearance, good keeping, and good eating.

Forecast Fruits Generally Short; Citrus as Plentiful

Reporting on the food supply situation for 1936-37 the bureau of agricultural economics of the U.S. department of agriculture, asserts that 'the production of fresh fruits in the United States is indicated to be the smallest in recent years * * * and * * * the apple crop is reported to be the smallest since 1921 * * * Cherries and peaches are unusually scarce but pears and citrus fruits promise to be plentiful."

Commenting on the food supply as a whole the writers say that "although the drought has cut sharply into the of foods in general for the 12 months ending with June, 1937 is indicated rains and high humidity at the time storage is severe it may impair the to be only about 3% below that of 1935-36 and 1% less than in 1934-Internal diseases and defects which ing the interior unsightly and by low- 35. Since exports of many of these products probably will be less than in the previous year, the supply of food available for domestic consumption will be almost as large as last year."

P these pruning studies of full-bearing Washington navel orange

trees at Corona, California have been published in the Citrograph in the issues for May 1919, October 1925, July 1929, May 1931 and July 1933. The present report summarizes the data and observations obtained dur-Naturally, during this rather long period, the writers have had numersults of commercial pruning work in ticular pruning practice and solely bearing, healthy trees of the Wash-Washington navel orchards located in all of the principal citrus producing districts of the state. Those observations will be referred to in connection with the discussion of the various phases of this experimental study and will be summarized in the concluding paragraphs.

Object of the Study

During the state-wide freezes of the 1912-1913 season the fruit and in 1913, it seemed that the heavy 1919. The writers wish to express is believed that the results are such pruners of wide commercial experipruning practiced by some of the their deep appreciation for this helpgrowers was likely to be detrimental ful cooperation. to the trees and in other instances The object of this experiment has the pruning operations were probably been to study the efficiency of sevnot only excessively severe but also eral commercial methods of pruning

DREVIOUS progress reports on Pruning Studies With Washington Navel Orange Trees

By A. D. Shamel, Principal Physiologist, and C. S. Pomeroy, Associate Pomologist, Division of Fruit and Vegetable Crops & Diseases, United States Department of Agriculture, Riverside, California

ing the past 22 years in these plots. tain some dependable information on of unpruned with that of the pruned this subject this experimental study trees in carefully selected plots over a was undertaken in July, 1914 with- considerable period of time. These ous opportunities to observe the re- out any preconceived ideas as to par- studies have been made with full-

These pruning experiments conducted on Washington navel orange trees at Corona, Calif., are based on a study covering a period of 22 years. They were begun in 1914 under direction of A. D. Shamel and the trees, their behavior, production and quality of fruit, have been under his observation and those of his associates in the U. S. department of agriculture for the time since.

It is very seldom that an experimental study of any branch of horticulture extends over so long a term of years.

It shows rather conclusively that any pruning that was done was detrimental to the yield of the pruned trees about in proportion to the amount of living foliage

very costly to the growers from sev- Washington navel orange trees as eral points of view. In order to ob- well as to compare the performance

Summary of data obtained in Washington navel orange pruning plots, 1914 to 1935, inclusive.

Pruner	Treatment	Before pruning	After pruning							
		1914	1915	1916	1917	1919–35*	1915–35			
	the en viscols dead	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds			
No. 1	Pruned Unpruned	157.6 153.1	187.4 247.2	89.0 104.2	$232.2 \\ 223.7$	268.7 275.2	253.9 262.7			
A THE	% difference	+2.9	-24.2	-14.7	+3.8	-2.4	-3.4			
No. 2	Pruned Unpruned	154.8 153.0	207.5 263.4	78.0 107.8	256.4 242.2	280.9 276.1	265.8 265.3			
	% difference	+1.2	-21.2	-27.6	+5.9	+1.7	+0.2			
No. 3	Pruned Unpruned	165.0 173.2	233.2 274.3	98.2 144.4	227.3 238.1	266.5 278.9	254.5 269.9			
	% difference	-4.7	-15.0	-32.0	-4.5	-4.5	-5.7			
No. 4	Pruned Unpruned	184.1 188.8	152.8 265.6	91.9 145.5	218.4 207.1	254.0 279.5	239.0 268.5			
	% difference	-2.5	-42.5	-38.6	+5.5	-9.1	-11.0			
No. 5	Pruned Unpruned	192.3 177.3	231.1 265.3	109.7 132.4	206.3 201.6	264.9 270.0	252.6 260.0			
	% difference	+8.5	-12.9	-17.1	+2.3	-1.9	-2.9			
No. 6	Pruned Unpruned	175.6 190.5	150.0 250.9	102.0 147.8	231.8 194.3	285.6 263.6	267.9 253.7			
633882	% difference	-7.9	-40.6	-31.1	+19.6	+8.3	+5.6			
Entire plot	Pruned Unpruned	171.2 170.7	193.7 261.1	94.8 130.3	228.7 217.8	269.5 274.3	255.0 263.6			
The same of the sa	% difference	+0.3	-25.8	-27.2	+5.0	-1.7	-3.3			

^{*}There was no crop in 1918 due to extreme heat in 1917.

some of the foliage of the trees in from the practical point of view. It ington strain and have been carried many California citrus districts was was begun in cooperation with the on under favorable environmental injured more or less severely. The owners of the ranch, the Ethan Allen conditions. This investigation has in this experiment in 1914 differed rather serious effects of those frosts Chase family, and that cooperation been conducted without interruption, in severity and in minor details which led to the use of extensive and, in has been continued by the manage- except in 1918 when a general crop were characteristic of the systems many cases, severe pruning practices. ment of the American Fruit Growers, failure resulted from the extreme practiced by the individual pruners. From observations by the senior writer Inc. who purchased the property in heat of the previous summer, and it Two of the men were leading Italian



Typical heavily pruned tree in one of the experimental plots showing at the left the amount f growth removed in July, 1914. The pattern of lights and shadows on the ground under the tree indicates the extent of the opening up of the tree top through pruning.

that reliable conclusions can be drawn ence and the others were local pruners of this variety.

Plan of the Experiment

nate tree or five trees.

ington strain. They had made normal

from them which are of importance, ers. All of the pruners attempted to particularly to the California grow- remove dead wood from the pruned trees and the older, injured or decadent growth. In some instances, particularly with the Italian pruners, The experimental plot consisted of the larger pruning cuts were espe-11 rows of ten trees each and six cially well made and in all cases every pruners cooperated in carrying out effort was made through careful thinthe test. Five of the pruners used ning to open the tree tops so as to plots of 20 trees each, pruning every admit light and permit air circulaalternate tree, or ten trees each. One tion. Approximately from 15 to 40% pruner used only ten trees, owing to of the tree tops were removed by the circumstances, pruning every alter- different pruners depending upon the degree of severity of their methods The pruning plot was carefully se- with an average of about 25% of the lected in a 250-acre navel orange tree tops removed. The prunings planting. The trees had been planted were cut up and eventually worked in 1903 and they had not been into the top soil excepting those limbs pruned previous to the beginning of which were too large to be handled this study. They were all apparently in this manner. All the pruners cohealthy trees and typical of the Wash- operated fully in this study with the

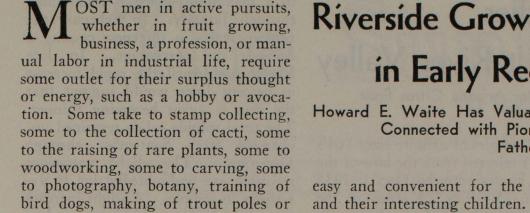
Continued on Page 486

vegetative growth, were producing normal crops of fruit and no abnormal insect infestation had occurred.

The location of the ranch on which the pruning plot is situated is an intermediate one with relation to the coastal plain and the interior citrus districts. The soil is deep, well drained and fertile. The irrigation water supply is adequate in amount and of good quality. No previous orchard crops had been grown on the property before the orange trees were planted. The best citrus propagation practices known at that time had been used in growing the nursery trees, which were budded on sweet orange rootstocks. They were planted at the rate of about eighty trees per acre. While little fertilizer had been applied to the soil previous to the starting of this experiment the subsequent fertilization practice has been to use reasonable amounts of barnyard manure and inorganic nitrogen at regular intervals.

Methods of Pruning Used

The six methods of pruning used

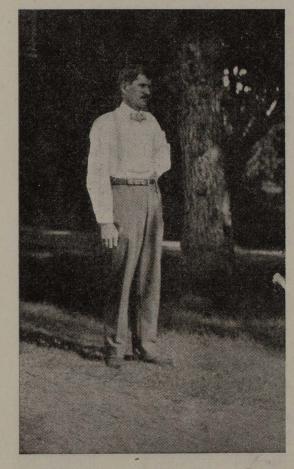


October, Nineteen Thirty-six

chickens, etc. etc. Howard E. Waite, citrus fruit grower of Riverside, takes as one of his chief pleasures a laudable and keen interest in the early development of orange growing in the Riverside area in which his father, the late C. Weld Waite, played an important

fishing gear, some to chess, some to

Howard Waite's interest in his father's choice of a home place has



Snapshot picture of C. Weld Waite, who died in 1914, taken under tree at his Atlanta avenue home.

led him to the erection of the third home on the same site on the family orange grove on Atlanta Street, (named from Atlanta, N. Y., the original home of the Waites), Riverside. The family was about to move into the very attractive and homelike place just completed when the writer visited him recently. Illustrations which accompany show the successive home places on the Waite 40 acre navel orange grove.

First, there was the original place erected by C. Weld Waite back in the late eighties—approximately 1887. The picture of that particular home appearing in this number was taken in April, 1899.

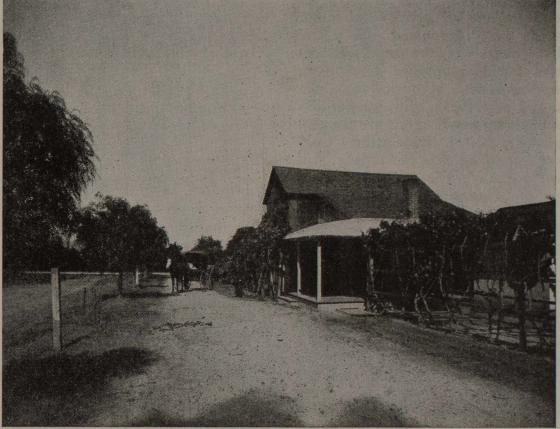
Then, a few years later, came the erection of a more modern home on exactly the same location. Not many months ago, however, Howard Waite found that his family of three keen youngsters and their mother, as well developments for making home life had a share in about everything which printing himself. In his large collec-

Riverside Grower With Keen Interest in Early Records of Citrus Growing

tion. Some take to stamp collecting, some to the collection of cacti, some Connected with Pioneer Days of Industry to Which His Father Contributed Much

development of fancy strains of Waites have recently moved, is on the the granting of the original deed in

The third home, into which the his home which was, at the time of



East view of the C. W. Waite home at Riverside, taken in April, 1899.

PRIESTLEY HALL,

Agents for the Ætna, Hartford, and London, Liverpool and

Castleman Block, Eighth Street.

Have For Sale:

" " " 1200 per acre

Young Orange Groves,..... 1000 per acre

other trees.....\$600 to \$800 per acre

Houses and Lots.....\$1200 up to \$12

Lots in all the Additions......\$200 up to \$2000

Places planted with Oranges, Grapes and

Photostatic copy of citrus grove real estate advertisement in the Riverside Press of 1888.

to \$1000 an acre.

A: MARTIN,

same spot where stood the two earlier 1885, within the boundaries of San

In the new home are carefully pre-

Bernardino county.

The senior Waite, who passed served records, largely photographic, away in 1914, was very fond of pho-

OSCAR TORD,

" 1300 per acre

" " 750 per acre • 1 T4

class Or

growth ou

For priv

Orange Trees AT HALF PRICE.

nne large first-class Globe, the most reliable Fire Insurance Companies doing business in the United States, also the Mutual Life Insurance Com-

AHABITIBAL

& SIMMS hurdred first-class Navel, Mediterranean Sweet, St. Michael and Malta Blood Orange Trees unsold. Those wanting clean, healthy trees grown in Old Bearing Orange Groves, \$2000 per acre l'ie county will leave orders with . A. SIMMS, Carr Block, Main St. will contract to deliver and set tree's in orchard. Address WAITE & SIMMS. W. W. RYNERSON.

HORSE SHOEING By Palmer & Rynerson. MRS. R. W. SPENCE,

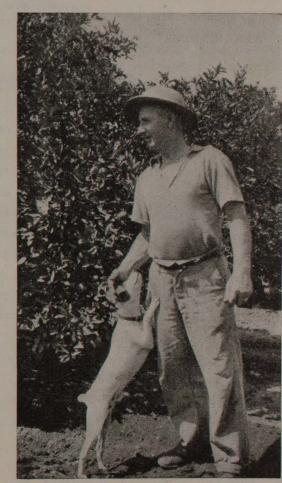
ARTISTIC ::/MILLINERY

The price range is interesting. Old bearing groves \$2,000 an acre; young groves \$750 as himself, needed a little more con- of the family life and activities of the tography. He took many hundreds of venient home, fitted with the later Waite family. For C. Weld Waite views and did the developing and

tion, now carefully preserved by the son, is a pictorial portrayal of the family doings, the development of the ranch, the trips taken, as well as informal group photographs of many of the now influential men of Riverside. These were largely taken in the boyhood days of the subjects.

Clippings from the Riverside Press in the early days-1888 and thereto photography, botany, training of easy and convenient for the mother went on in civic affairs of Riverside abouts—were attached to the walls and, particularly, that part where lay of the old house and these were preserved as best they could be at their extreme age and considering the fragility of the brittle paper on which they were printed. Some of these are reproduced with this article just to show that the growers 50 years ago were talking about some of the same things—sweet vs. sour root stocks, for example—that even now occupy their attention. It must have been a bit discouraging to anyone just entering the citrus growing business to read, as they might have done in the Press of Jan. 18, 1888, that just four days before, ice was floating down the Sacramento river for the first time since 1854. Another short item declared that the thermometer registered 19 degrees at Sacramento.

Then there were recipes in the old tear-sheets of the Riverside paper—



Howard E. Waite and the family pet beside one of his very productive navel trees.

even in those days—for making culinary delicacies from citrus fruits. One tells how to make "Orange Water-Frost." It read as follows: "Take half a pound of powdered sugar, sifted; add the juice of an orange, two spoonfuls of water; stir all to a frost which will flow thickly from a spoon. Then use."

That seemed especially appropriate at that period, probably, because of the extreme cold which the state was experiencing, for "frost" or snow could hardly be available at other times in Riverside district.

Reference to the advertising columns of the Press, which are reproduced herewith and which are photostated from the original pages torn

Continued on Page 470

to a maximum which is maintained

range of soil types which necessitate considerable variation in cultural practices. During past years fruit from some groves has been somewhat delayed in reaching the state maturity standard ratio of six parts sugar to one part acid. In 1934 and the following manner. Juice was from 88 samples of definite sizes (64's 1935-36, 847 tests were made by the extracted with a Sunkist Junior ex- to 126's) selected from the bins of the state department of citrus standard- tractor and drained through a sieve packing houses between Dec. 1, 1935 ization in cooperation with the Uni- and heavy cheesecloth. The free juice and Jan. 15, 1936. A study of the versity of Arizona agricultural experitives thus obtained was used in the deter-development of the fruit data indiment station to determine the factors mination of total soluble solids and affecting the ratio and to determine if acid. The pulp remaining in the sieve a more satisfactory standard could be was squeezed by hand to obtain the developed. It is recognized that this total volume of juice. Total soluble will require studies over a number of solids were determined with a Brix years. This report summarizes the hydrometer after the samples had set-

larger) and small (100's and smaller) fruit was measured.

CITRUS trees in the Salt River Valley are grown on a wide Grapefruit Maturity Studies in the Salt River Valley

By R. H. Hilgeman, Chief Deputy Inspector Arizona Citrus Fruit Standardization Service*

tled for 15 minutes. The percent In 1934 four samples were tested acid expressed as citric was deterdaily from Oct. 7 to Dec. 15. Nearly mined by titration with standardized all of these samples were taken from sodium hydroxide using five drops of loads of fruit as they were delivered phenolphthalein as indicator. Color at the packing house. The samples was classified by comparison with were divided into large (80's and color disks. The diameter of each

Table 1 presents the percent juice During 1935-36 the same type by volume and the sugar-acid ratio cates that the fruit has reached its

TABLE I. Comparison of Large and Small Fruit 1934 and 1935

			RGE -64's)		SMALL (100's—150's)				
WEEK ENDING	1934		1935		1934		1935		
	Ratio	Percent Juice	Ratio	Percent Juice	Ratio	Percent Juice	Ratio	Percent Juice	
October 13	7.91	30.5			7.82	33.0		,	
October 21	8.04	31.7	7.05	32.0	7.82	35.0	7.13	37.0	
October 28	7.75	32.7	7.18	33.1	7.40	36.1	6.83	37.7	
November 2	8.19	33.5	6.76	33.9	8.00	36.8	6.72	38.1	
November 9	7.97	34.1	6.69	34.5	7.82	37.3	6.54	38.4	
November 16	7.80	34.3	6.66	35.1	7.24	37.6	6.62	38.6	
November 23	7.80	34.5	6.50	35.2	7.55	37.8	6.47	38.7	
November 30	7.93	34.7	6.57	35.3	7.78	38.0	6.08	38.7	
December 7	7.93	34.7	6.77	35.3	7.82	38.2	6.97	38.7	
December 14	8.00	34.7	6.37	35.3	7.66	38.3	6.93	38.7	

of packing house samples were ob- as indicated by samples from the packtained except that they were taken ing houses during 1934 and 1935. from the bins after the fruit had Percent juice as shown is taken for been sweated. After Dec. 1 the the dates mentioned from a decular selection was narrowed down to def- trend for the period. Ratios are inite sizes and grades. Also weekly weekly averages and are subject to tests were made on samples from considerable variation. This variation ten groves in two districts growing is largely due to the section and grove in different soils and subjected to from which the fruit was obtained. varying cultural practices. In each Due to the nature of the sampling grove three trees, located about 200 it is not possible to correlate this feet below the head ditch in dif- variation to a definite district. ferent rows were tagged. Weekly Comparing the averages of the two samples were taken from these trees vears it is evident that the large fruit from Sept. 9 to May 1. Four fruits, has about a .3 high ratio and about one inside, one outside and two be- 3% lower juice content than the tween these extremes, were obtained small fruit. Comparing the two years, from each tree. The diameter of the 1935 is about 1% higher in juice confruit used in testing gradually in- tent in comparable sizes and 1.2 creased as the season progressed. In lower in sugar-acid ratio. addition trees in 11 groves in three The relative relationship between other districts were tagged and sam- the large and small fruit trends were ples taken intermittently during the maintained in both years. The large average weekly data obtained from rate fairly comparable with the fall and early winter.

TABLE 2. Maximum Per Cent Juice According to Diameter of Fruit

Diameter in Inches	Volume in CC	Percent Juice by Volume	Size Packed Box
3.3	285	41.0	126's
3.4	315 355	40.2 38.5	100's
3.6	395 430	37.0 36.2	901
3.8	465 500	35.4 34.8	80's
4.0 4.1 4.2	540 580 620	34.4 34.3 34.2	70's
4.2	660	34.2	64's

maximum juice content during this period. Therefore it was assumed that each sample had attained its lated with the diameter of the fruit maximum juice content. The data ing house several days, these percent- of 6.35:1. ages will be somewhat high when ap-

development of the fruit are shown taining the standard ratio of 6:1, but in Table 3. This is based on the that the juice increases at a normal

through January. In February the rind increases in thickness causing a decrease in percentage. In late March and April the rapid increase in percent juice would suggest that the skin is again becoming thinner. The total soluble solids remained unchanged from September through December. The slight variations recorded are undoubtedly due to variations in samples. A slight increase occurred during midwinter and a sharp decline develops in the late spring. Changes in percent acid are characterized by a sharp decrease in the early fall and the spring, with a slight increase during the late fall and early winter. These changes are reflected in the ratio which increased rapidly in the early fall and spring and changed only slightly from Nov. 1 to Jan. 20. This is of interest when correlated with the mean temperature and growth of the tree. Low temperatures appear to check the decrease in acid and in certain instances an actual increase apparently occurred. The fall and spring growth also cor-

respond in a general way. If the juice percentage is correused in the samples, it is found that demonstrate that percent juice is of the maximum percent of juice is not little value in ascertaining the matur- reached in eight of the ten groves ity unless it is correlated with the size until December. At this time the of the fruit tested. Inasmuch as the fruit was fully colored, contained data are based on fruit obtained from 35.1% juice by volume (diameter the bins after it had been in the pack- 3.78 inches) and had attained a ratio

A further study of the data from plied to field samples. Shrinkage test each grove, which space will not permade earlier in the season indicates mit to give in detail, indicated certhat ½-1% should be deducted for tain trends and observations worthy of note. It was found that old groves The changes which occur in the (20 years and older) are later in at-

SUMMARY Ten Groves for Year 1935-36

DATE	Total Soluble Solids	Percent Acid	Ratio	Percent Juice	Diameter of Fruit	Percent Color	Mean Tempera- ture
September 10. September 17. September 24. October 1. October 8. October 17. October 24. October 31. November 8. November 14. November 21. November 27. December 5. December 12. December 19. December 19. December 26. January 3. January 9. January 9. January 16. January 23. February 15. February 15. February 22. February 29. March 7. March 14. March 21.	Soluble Solids 11.38 11.46 11.34 11.39 11.52 11.53 11.81 11.57 11.40 11.42 11.44 11.52 11.56 11.75	Acid 2.12 2.07 2.00 1.96 1.86 1.80 1.89 1.84 1.86 1.82 1.81 1.78 1.80 1.84 1.83 1.83 1.83 1.83 1.83 1.83 1.86 1.86 1.88 1.80 1.66	5.37 5.54 5.68 5.81 6.18 6.41 6.57 6.12 6.27 6.27 6.32 6.43 6.41 6.28 6.43 6.43 6.45 6.64 6.49 6.61 6.74 6.71 6.82 6.98 7.20	Juice 24.4 25.8 27.48 29.3 31.2 32.1 33.8 34.7 34.6 34.9 35.3 34.2 35.1 34.9 34.9 35.1 34.9 35.1 34.7 34.9 35.1 34.7 34.9 35.1 34.7 31.9 33.8	of Fruit 3.05 3.18 3.29 3.34 3.39 3.34 3.32 3.34 3.45 3.40 3.48 3.51 5.54 3.78 3.72 3.82 4.05 3.84 3.78 3.66 3.81 3.84 3.87 3.90 3.89 3.92 3.94		82.9 82.8 81.7 77.6 79.0 72.5 65.9 62.2 54.3 55.2 55.5 58.1 58.5 53.0 53.5 53.6 46.3 47.8 53.9 47.9 52.3 54.2 55.2 59.0 63.6 65.1 67.1
March 28	11.87 11.62 11.35 11.31	1.63 1.58 1.52 1.46	7.25 7.39 7.47 7.75	32.8 34.1 35.3 36.9	3.90 4.03 5.04 3.98		50.5 63.2 76.8 74.1

difference in ratio between the two ten groves; to this has been added the younger groves. Laboratory data were secured in years is apparently due to some other mean temperature for the seven days *This work was conducted under the supervision of Prof. A. F. Kinnison and D. W. Albert of the University of Arizona agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. Osborn E. Foster, assistant agricultural experiment station and J. M. Foote, supervisor of inspection. is based on a secular trend obtained six-week period it increases gradually

The highest percent juice was atfactor than soil, location or cultural preceding the tests. The percent tained in young groves growing in a

Continued on Page 492

The Sunkist Courier DEPARTMENT

The success of cooperation lies not so much in cooperation itself as in the individual

COMPILED MONTHLY IN THE OFFICES OF THE CALIFORNIA FRUIT GROWERS EXCHANGE

More Navel Advertising **Voted for Next Season**

October, Nineteen Thirty-six

Exchange Directors Unanimous In Approving Two Cents Per Box Increase

To better meet increasing competition, an additional advertising appropriation on navel oranges of two cents per box for the 1936-37 season, bringing the total budget for this variety to \$650,000, was voted by the directors of the California Fruit Growers Exchange on August 26.

"With this added appropriation our regular navel campaign in all principal mediums will be amplified with heavier coverage in the large eastern markets, largely through increased use of newspaper advertising and other point of sale efforts," said W. B. Geissinger, Sunkist advertising manager.

"This action, which means a total investment of seven cents per box, or around \$650,000 for Sunkist navel advertising next season, was made upon recommendation of the adver-Continued on Page 464

Supply Co. Refunds \$325,000 to Exchange Associations

On September 1 an advance refund on box shook was made by Fruit Growers Supply Company in the amount of \$325,000, equal to the remainder of the year will be refunds will be made on boxes after the close of the year, together with

of their own mills in northern Cali- preme Court for final disposition. fornia and by the ability to purchase in volume, the paramount value of their being assured at all times of a this publication. dependable supply of materials essential to the preparing of their fruit for market.

Supply Company earnings to the end of July were \$671,108, compared with \$648,568 for the like period of \$1.27 for 1935.

\$1.00 of indebtedness.



Summary of the Month in Court With Agreements and Prorate Plans

Further substantiating the validity of the section of the Federal AAA covering the marketing agreement for oranges and grapefruit, which has been 1.675c per box, and billing prices for highly beneficial to California and Arizona growers during the past three years, Federal District Judge Yankwich on September 8 permanently reduced by a like amount. Further restraining Hugh Edwards, Colton, from shipping oranges out of the state in in California through the Exchange violation of prorates set.

refunds on other packing house and exercise of the power of Congress to state license in this case. An early deregulate commerce," the judge said, cision on the constitutionality of the Substantial as are the savings to in a decision which may become the "Little AAA" is now anticipated. the grower effected by the operations test case which first reaches the Su-

opinion of Judge Yankwich was the company to its members lies in given on page 239 of the May issue of

When the Pico Citrus Association case involving constitutionality of the California Agricultural Adjustment Act, or "Little AAA", came before 1935. Overhead expense has been the California supreme court on Sepheld to the lowest point in 20 years, tember 1, it was agreed to submit the being \$1.05 on each \$100 of business case on briefs and each side was given transacted, which compares with twenty days consecutively in which to do so.

the company is shown by the ratio of cation by the state director of agricul- of the facts. current resources to current liabiliture and the growers advisory com- Judge Palmer agreed that the act ity in the industry continue to try to ties, which, on July 31, stood at 5.54 mittee, the supreme court granted a was constitutional and valid, but accomplish the main objective, which to 1; in other words, the company writ of prohibition, preventing the ruled that the provisions of the act is to use this new type legislation to had \$5.54 with which to pay each superior court of Los Angeles county were not complied with in two in- help improve the economic situation from enforcing a temporary injunc- stances: (1) that the petitioners of agricultural producers.

A complete report of the original fornia Prorate Commission, proration petition was based on the previous program committee and zone agent year's crop which was believed at from enforcing or attempting to carry that time to be the only accurate and into effect the lemon proration pro- practical method) and (2) the proragram was granted by Judge Wm. J. tion program was based on storage Palmer of the Los Angeles county instead of production as required by superior court on September 4.

rate Act. The high court held the Act. act constitutional and referred the These court decisions are ground The strong financial position of It will be recalled that, upon applicase back to the lower court for trial out slowly, some pro and some con,

Valencia Market Continues Strong

August Lemon Prices Lower But Still Satisfactory; Light Movement of Grapefruit

Despite the customary seasonal dullness in August, the Valencia market continued strong. The f.o.b. average per box on all Exchange packed Valencias sold in the United States and Canada was only 4c below the July average, whereas the 5-year average August price has been 18c less than for July.

Volume of packed domestic sales was heavier than in any preceding August with the exception of 1935 and 1932, while the average price was 65c per box more than in 1935 and \$1.08 more than in 1932. Total f.o.b. returns on packed Valencias sold by the Exchange in the United States and Canada were the best since 1930, exceeding last year by 22% and being 6% more than the very satisfactory record of 2 years ago, and 32% more than the 5-year August average.

The export demand, too, was unexpectedly strong, and a very satisfactory business was transacted in Europe, the Hawaiian Islands, and the Orient. Local orange business in California was even better than in July, and preliminary figures indicate that both volume of sales and total returns on loose oranges sold in August will establish a new "The prorate provisions are a valid tion prohibiting enforcement of the monthly record for any month in any

Continued on Page 464

were not owners of sufficient produc-An injunction restraining the Cali- ing factors at time of petitioning (the the act.

This is the case originally brought Judge Palmer also held that the by a group of non-Exchange lemon state acts within the scope of its poshippers. It went from the Los An- lice power and not in contravention geles county court to the California of the commerce clause of the Federal supreme court for ruling on the con- Constitution in the enactment and enstitutionality of the California Pro- forcement of the California Prorate

and in the meantime the vast major-

Valencia Market

Continues Strong Continued from Page 463

vast quantities of home and commer- by this committee, along with our cially grown peaches, pears, apples, cantaloupes, watermelons and other seasonal products that come into harvest during that month. But due to extremes of heat and cold, production of these fruits in many states, as well as quality, was below normal. For this reason, the consumption of Valencias was not as much affected as in many former years. So that while Valencia prices declined from the exceptionally strong July close, by the end of August values were well in line with closing July prices.

An unfavorable factor that was much more evident than in a number of years was the slump in demand on account of August vacationing. The large eastern cities reported a record number of people leaving homes on vacation this August, with the result that the movement of fruit and produce through retail stores was noticeably retarded.

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. This quantity was 3,700 cars less than the movement after the comparable date a year ago, or a reduction of 25%. Prospects at this time indicate a stronger demand in September than existed in August.

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. After the middle of the month, however, the weather improved and supplies quickly decreased. Thereafter an active demand prevailed with supplies in the hands of the trade at the close of the month comparatively light.

Sales for the month were slightly below the volume for August last year but considerably above average August sales. Prices during the month, although considerably lower than for the preceding month, were satisfactory.

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.

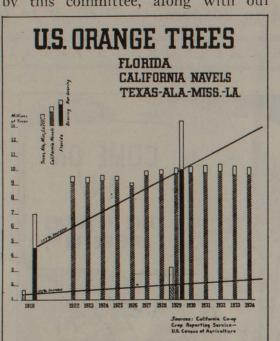
Grapefruit

Due to the light quantity of Cali-markets. It is expected that a strong tive territory. fornia grapefruit remaining, August demand will prevail for the light shipments were very light. Although grapefruit consumption was drasti- ment of the new crops begins.

shipments went east in mixed cars nia. On the other hand receipts Florida in the increasing struggle for marketing agreement, and at the time with Valencias, as demand and move- from Puerto Rico were very light, the preference of the American house- of his death was a member of the ment did not justify the trade in being much below normal.

More Navel Advertising Voted for Next Season Continued from Page 463

As is usual in August, strong com-tising committee, following extensive petition was encountered from the analysis of the competitive situation



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 thing to do under the circumstances," department," Geissinger said.

"Our directors' decision, which

TOTAL ORANGE SHIPMENTS

5 YERR AVERAGE 1931-32 TO 1935-36 (NOV. IST TO MAY IST)

DURING THE SIX NAVEL MONTHS (LRST SYRS) FLORIDA SHIPPED

general appreciation of our navel

growers of the need for advertising

many markets in attempting to han-

dle carload quantities of grapefruit.

Distribution in this manner was

maintained over a wide area from

coast to coast, and average prices

the old crop remaining to be mar-

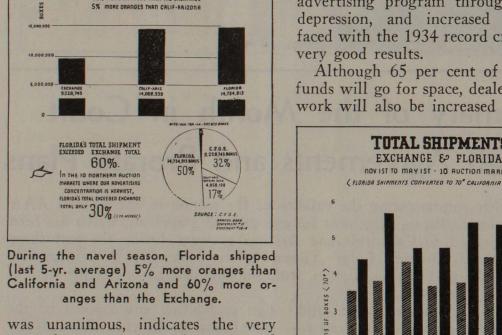
keted after Sept. 1. This will be

There is a very small quantity of

were the best since 1930.

if possible improve the position of California Sunkist navels in the eastern markets during the Florida competitive season, is not without precedent. The Exchange maintained its advertising program throughout the depression, and increased it when faced with the 1934 record crop, with very good results.

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.

distributed principally in western likewise be concentrated in competi-

"The Sunkist navel campaign will quantity available before the move- begin in November when this variety change extends its sincere sympathy begins to move to market. The basic to the Florida Citrus Exchange in cally curtailed by competition from Florida shipments started with the campaign previously authorized in the death some weeks ago of its presideciduous fruits and melons and other movement of six cars during the week cludes use of magazines, newspapers, dent, John S. Taylor. Mr. Taylor seasonal products, the reduction in ending Sept. 1. Isle of Pines ship- posters, and car cards. The increase was associated with the citrus indusshipments more than offset the ments were very heavy in August, will all be spent in point of sale ad- try since his childhood and had large lighter demand, and grapefruit prices considerably heavier than in recent vertising and merchandising in the citrus holdings. He was chairman of advanced considerably over July sales. years, and were practically the only eastern markets where 70 per cent of the first citrus control committee A considerable proportion of the source of supply other than Califor- our fruit is sold and where we meet which administered the federal citrus wife," Geissinger stated.

effort behind this variety, and we are \$1.35 Per Hundred Rate Receives Final Approval

U.S. GRAPEFRUIT TREES 1909 to 1939 SOURCE-U.S. CENSUS OF AGR. 1909 to 1929

certain the action is a wise one and

will pay dividends to the growers,'

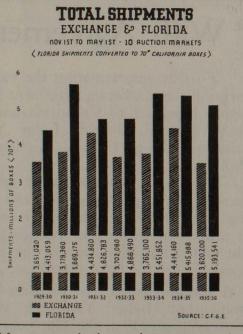
was the statement of General Manager Paul S. Armstrong.

Note the rapid increase in grapefruit plant-

ings in all states.

"While many of us dislike increasing the competitive nature of our navel advertising, it seems the only

This aggressive move to hold and



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.

1 1 1 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. Geissinger, 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.

1 1 1 1 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

1 1 1 1

The California Fruit Growers Exexpressed 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 of results in the University of California laboratories at Los Angeles, with those obtained in eastern cities, Florida citrus commission. stable in oranges.

Research Shows Navels New Refrigeration Rates Richer in Vitamin C In Effect September 10

October, Nineteen Thirty-six

Of great interest to California The refrigeration charges for citnavel orange growers, as well as to rus fruit prescribed by the Interstate orange juice consumers and chemists, Commerce Commission are not afare the results of analysis of the juice fected by the injunction proceedings of more than a carload of oranges— brought in the federal court against California navels and Florida varie- the commission's order by shippers of ties—to test richness in vitamin C. perishable products other than fruits The research was done for the Cali- and vegetables, such as meats, packfornia Fruit Growers Exchange by inghouse products, dairy products three leading eastern chemical labora- and beverages. tories, none of which knew of the

The commission's decision required other's similar tests. reductions in most of the refrigera-A. J. Lorenz, director of nutrition charges for fruits and vegetables tional research for the Exchange, re- from California and Arizona but ported on this research to the Amer- authorized substantial increases in ican Chemical Society in session in the refrigeration charges in all parts Pittsburgh early in September. of the country on perishable products Juice of the California navel other than fruits and vegetables. oranges showed up 22 per cent ahead When the shippers, whose charges of Florida orange juice in vitamin C, were so increased, sought an injuncthe scurvy-preventing factor in which tion against the increased rates, the the fruit is so abundant, in a two-year carriers countered with a proposal series of tests recently completed. that the reduced charges on fruits and vegetables likewise be with-This discovery is in line with curdrawn. The injunction order enrent announcement by the bureau of tered, however, relates only to the home economics, U.S. department of charges on products other than fruits agriculture, which found the juice of

California navel oranges richer than and vegetables, and the reduced rates

that of other varieties; also that

This research covered the two-year

navel orange production periods be-

ginning in the fall of 1934 and con-

tinuing through the spring of 1936.

in New York, Philadelphia and Chi-

cago, supplemented with tests on

California oranges at home. All lab-

oratories employed the same method

of vitamin C determination—a new

pensive animal feeding tests.

well as methods employed.

richer than tomato juice in vitamin C.

or white layer of skin.

orange juice is two or three times These reduced rates are the result of an investigation instituted by the Mr. Lorenz also told the chemists commission on its own motion, which that to "get the most" out of an has been in progress continuously orange—the richest possible juice, during the past eight years. When that is—it must be "reamed," not merely squeezed, just to the albedo, 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 Tests were conducted in laboratories services that were available were those permitting initial icing by the shipper or carrier, with or without

precooling, without any reicing in

prescribed on California and Arizona

fruits and vegetables are now in effect.

During the progress of the Comchemical method of modified iodine titration developed by Exchange lab- mission's investigation, the California oratories to replace the long and ex- Fruit Growers Exchange in cooperating with the carriers furnished fruit for 37 test trains from Califor-Had it been necessary to employ nia direct to New York in order to animal feeding tests instead of chemdevelop new and practical methods ical determinations, the survey would of refrigeration adapted to the citrus guinea pigs instead of a few chemical showed that modified types of rereagents, as well as the juice of frigeration were practical and economical. Through subsequent nego-14,000 oranges in lots of 12 boxes tiations the shippers secured concesweekly. Agreement between the varisions from the carriers in the form of ous laboratories was within one per additional modified types of refrigercent, which speaks well for the ac- ation, including the services permitcuracy of the research chemists as ting one reicing in transit and replenishing. The carriers were also induced to make substantial reduc-The two-year average vitamin C tions in charges for furnishing ice at

content of California navel oranges 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 California navel oranges. Uniformity 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 carindicates vitamin C is remarkably riers during the progress of the investigation.

Sunkist

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. ish market was bare, and 25 carloads of small sized fruit were diverted via real from September 10 to 19.

have required the use of 168,260 industry. The results of these tests tons previously granted, the French ship it." government on September 12 acproximately 102,000 California boxes. grapefruit."

Good Test for Determining Maturity of Citrus Fruit

CALIFORNIA

Lemons

FLANOR

Chairman L. P. Kirkland of the Florida citrus commission has his own way of testing the ripeness of grape-Due to financial exchange difficulties fruit and urges other citrus men to between Italy and England, the Brit- do likewise, according to a recent interview in the Tampa Tribune.

"Serve some of your own fruit to fast ships from New York and Mont- your own wives and children," he declared. "If they eat it and like it, In addition to the 10,000 metric then ship it. But, if they don't, don't

"This morning," Kirkland added, corded the United States a special "I put some of my fruit before my quota of 36,000 metric quintals of or- children. But I couldn't force them anges. This is the equivalent of apto eat it, and they are all fond of

Ala., Receipts

FIVE YEAR COMPARATIVE CITRUS SHIPMENTS From November 1 to end of August

		California	1				La. &	Puerto		Tota
Oranges	South	Cn-No.	Total	Ariz.	Fla.	Tex.		Rico		All
1936	43,972	8,461	52,433	262	38,928	313	109	5	0	92,050
1935	48,191	13,430	61,621	163	37,532	139	318	31	0	99,804
1934	40,845	6,609	47,454	156	42,322	63	153	41	0	90,189
1933	39,172	8,866	48,038	109	36,788	188	430	30	0	85,583
1932	43,778	9,720	53,498	107	33,190	233	371	79	7	87,485
Grapefruit										
1936	2,382	279	2,661	2,013	15,105	3,733	0	392	157	24,06
1935	1,490	128	1,618	899	18,717	4,331	0	337	23	25,925
1934	1,674	258	1,932	989	16,409	2,364	0	576	92	22,362
1933	809	58	867	426	19,386	3,894	0	30	28	24,631
1932	1,391	69	1,460	403	20,638	6,810	0	190	48	29,549
	THE PARTY							Rece	ipts	2000
Lemons								Fore	eign	
1936	15,388	427	15,815	1	0	0	0	27	1	16,087
1935	16,175	467	16,642	11	0	0	0	1	0	16,663
1934	14,393	303	14,696	0	0	0	0	7	2	14,768
1933	12,074	267	12,341	4	0	0	0	41	5	12,760
1932	12,036	358	12,394	3	0	0	0	23	5	12,632

The Sunkist Courier

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 and type of the organization, and the farm cooperation, Gov. W. I. Myers of the Farm Credit Administration competitive situation in the territory points out that courses in agricultural cooperation will be taught this year in which the cooperative operates. he reports whether funds will need in at least 45 out of 48 state colleges and universities.

"A record number of courses in cooperative marketing and business co- be general; yet, the points covered are operation 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 and the prices paid for supplies are every farm boy who has the advantage of an education to study and equip usually reported. Where records are himself not only for the technique of cooperation, but equip himself also for available, the foregoing items are leadership in cooperative agricultural development.'

He Should Go the Full Way

The story of cooperatives is much the same in all commodities the world ently discuss such reports with someover. Their beginnings, usually humble, were made necessary by the fact one who would convey this informathat farmers, unorganized, were easily exploited. With organization came tion to competitors to the detriment all the problems that came when men little used to large-scale business begin of the association. the battle with intrenched privilege. As handling margins grow narrower, brought about by the cooperative, it becomes more difficult for the co-op to presented. Current assets, current lia- items of general interest are remake the showing it once did. It must then rely on an informed member- bilities, reserves, and net worth are ported.—From "News for Farmer ship and loyalty if the cooperative institution is not to break down. The analyzed. Accounts receivable are Cooperatives." cooperative testing time comes when many of the problems that called it frequently analyzed in detail; that is, into being have been solved. But what other alternative is left to the farmer? by age and size with the view that If he quits his cooperative cold, he can look for the day of wide margins and sound credit policies may be adopted. all the old abuses to return again. That is true in any commodity he may Associations that revolve or rotate be marketing through his own organization. For that reason he should their capital scrutinize their net support as many types of cooperatives as he has types of products to market. worth, together with the operating Is to work with the construction gang 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 associa-

cover in his report to the board of directors? What should he omit? How detailed should the report be? the board's decision? These are some of the questions one manager asks of hears or reads the report of another association. If losses are incurred, the

The character of a manager's report will vary widely, of course, from one association to another depending upon the commodity handled, the size those which are common to the prob- board agrees, it passes the necessary lems 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 oper-

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 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 inadvert-

3. A financial statement is usually budgets and statements, to determine And not with the wrecking crew.

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 What points should a manager losses. If earnings or overages are available, shall they be distributed as patronage refunds, credited to reserves, or evidenced to members as What matters should be presented for membership capital? This is done in accordance with the provisions of the by-laws and contracts of the associaanother and aims to answer when he tion and the financial needs of 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, The following outline must therefore to be borrowed and if so in what amount and for what periods. If the resolution for borrowing and decides from which agency it will seek credit.

6. Questions of policy are submitted for 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

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

10. Finally, communications and

1 1 1 1

A good thing to remember, And a better thing to do,

Growth and Water Losses in Citrus As Affected by Soil Temperature

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

October, Nineteen Thirty-six

HE growth of rooted leafy- which time it was not possible to hold twig cuttings of Valencia or- the lowest temperature at 19 and it ange was studied in the soil was thereafter held at 20 degrees C. temperature tanks in the glasshouse The air temperature was subject to of the department of plant pathology the daily fluctuations in the weather from Feb. 8 to June 7, 1935. A rich and was that of the glasshouse. At sandy loam soil was brought to a any given time the air temperature suitable water content, then was thor- was the same for all of the cuttings. oughly mixed and was uniformly com- During the experimental period the

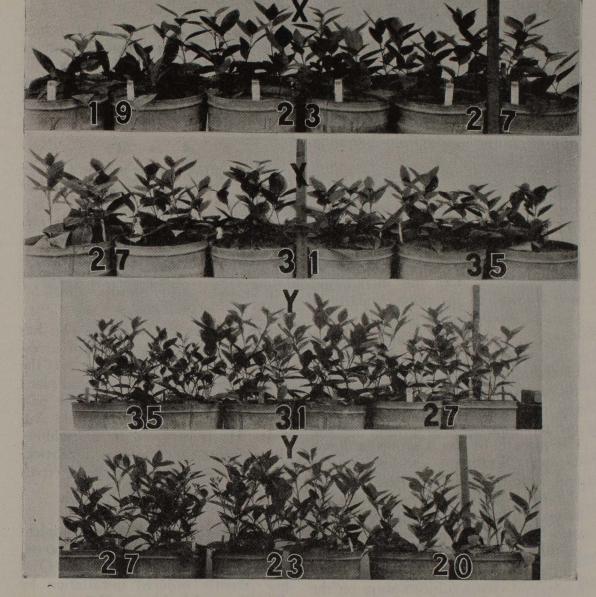


Fig. I—Effect of various maintained soil temperatures on the growth of Valencia orange cuttings in soil cultures at various temperatures: X, Cuttings grown from Feb. 8 to April 20, 1935; Y, Same cuttings as X, but grown until June 7, 1935.

kilograms of moist soil was used in degrees C. each container.

pacted about four cuttings in each mean weekly air temperature in the of 20 containers. Approximately nine glasshouse ranged from 25.5 to 28.7

Fig. 1 shows the growth obtained The soil temperature tanks were at the various temperatures. Only at maintained at the following tempera- 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.

	F	resh w	veight	(grams	s)	Di	ry we	eight	(gran	ns)
Portion of Cuttings	Degrees Centigrade									
	19	23	27	31	35	19	23	27	31	35
New growth of tops Original leaves of	62.6	105.0	96.6	106.6	76.2	15.7	30.6	30.5	33.0	22.2
cuttingsOriginal twigs of	41.1	37.2	36.0	37.1	30.4	17.7	15.6	15.0	15.8	12.9
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	$17.0 \\ 107.2$	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

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

tures: 19, 23, 27, 31 and 35 degrees was there any difference apparent in the growth.

> Table 1 shows that at the lowest Continued on Page 479



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.



Gaviota Fertilizer 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 polpacking house at Alta Loma by the installed in its packing plant. Citrus Machinery Co.

* * *

The Sept. 1 fruit measurements a slight drop of small lemon fruit, carried on by the Association Labora- prospects are that Santa Barbara tories at Anaheim since 1924 show "will have a good setting of that, with the exception of 1928 and summer fruit for next year, says Eu-1933, the sizes of both inside and outgene Kellogg, agricultural commisside fruits of the Valencia variety are sioner. 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.

* * *

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% double that of last year.

Arizona Citrus Growers at Phoeishing machinery is being installed in nix is having new grapefruit wash- crop in Los Angeles county range picture of Mrs. Mary Russell of that the Alta Loma Citrus Association ing, drying and polishing equipment from 50% of a crop to better than place holding a lemon which she grew

* * * Although warm weather has caused of navels is noted, he adds.

* * *

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 inter-

* * *

The 60 acre Goldman citrus ranch west of Lindsay has been purchased by E. W. Killian of Berkeley, who Further meetings for discussion of already owns citrus property near fall irrigation, fertilization, cover 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 high-

* * *

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. in lemon seeds, there are not enough speak on control of citrus thrips on and new grading tables. lemon seeds available to make it com- lemons. The work of the state strucmercially practical to collect, dry and tural pest control board was to be The 36th anniversary of the San process them. Experiments made have told by M. G. Jorgenson and some Dimas Orange Association was celetempt to convert the seeds into an oil. Mason. * * *

scale in California.

normal, says Harold J. Ryan, agri- there and which weighed a pound and cultural commissioner. Some splitting five ounces and measured 13½

from Orlando to Lakeland.

In anticipation of the navel orange harvest which will start in a few weeks, the Richgrove-Tasmine Citrus Association at Richgrove is installing new packing machinery in its house in early September. Mr. Moore was at Richgrove. New purchases in- a member of the Azusa Citrus Assoclude a washer, dryer and grading ciation.

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

* * * covered.

Estimates of next season's citrus A San Pedro newspaper prints the inches in circumference.

* * *

In order that it may be closer to The precooling plant of the Charthe base of operations of the Florida ter Oak Citrus Association was com-Citrus Commission, which has its pleted in time for use on the late picks offices at Lakeland, the Florida state of fruit in that house, says Wilburn market news station has been removed 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

> > * * *

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

x x x

As a second step in the complete modernization of its packing house, the Ojai Orange Association at Ojai Several citrus subjects were on the has recently ordered installation by program for discussion at the meet- the Citrus Machinery Co. of new ing of the Entomological Club of sizing equipment. The packed box Southern California at Alhambra, conveyors have also been recondi-Bailey, manager of the Exchange Or- Sept. 18. D. L. Lindgren was sched- tioned and an accumulator installed ange Products Co., of Ontario, as- uled to discuss fumigation studies on at the box press. Last spring the serted that while there is a useful oil red scale; W. E. Landon was to association put in a new washing unit

shown that lemon seed oil is not suf- common spray faults and suggested brated on August 27. The associaficiently valuable to justify the at- remedies were to be given by Roy E. tion, then known as the San Dimas Citrus Union, was incorporated in 1900 to handle both oranges and lem-Another exploration in search of In the Pacific Coast Packer recently ons. In December, 1910, the entire natural enemies of the black and red there was printed the story of a 1300 plant, which was full of oranges and scales will be undertaken shortly by mile mid-summer hike taken by Wil- lemons at the time, burned to the Harold Compere, research entomol- lis Ocker of Redding, Calif. The ground, and upon reorganizing the ogist for the University of California. trip included the walk through Death oranges and lemons were separated Mr. Compere is to leave Oct. 1 from Valley with sun temperatures of 165 into two separate associations. In its New York, bound for South Africa. degrees. His noonday meal comprised 36 years, the association has had only The expense is to be borne jointly only orange juice. By weight orange four managers, the first was C. D. by the citrus industry and the uni- juice supplied 50% of the total food Drum, being succeeded in 1904 by versity, the latter paying Mr. Com- consumed by Ocker on the entire tour. James E. Drummond. In 1910, the a year ago. Next year's crop of Va- pere's salary and the growers the The orange juice consumed by him late E. M. Wheeler became manager lencias is estimated at one per cent other expenses. Two years ago a was supplied by the American Fruit and served for 22 years until his regreater than for the year just closing. similar search was made in South Growers Inc. The Packer quotes tirement in 1932. Since then the man-Florida, it is estimated, will have a America and Mexico which resulted Ocker as saying that he eats oranges ager has been C. A. Nelson. An ingreatly increased volume of both in some parasitic pests of value, for strength and endurance and that teresting account of the association's grapefruit and oranges. Texas crop although none was discovered which the orange tree is the nearest thing history, written by W. A. Johnstone, of grapefruit is forecast at more than could be used for control of the red to the fountain of youth ever dis- was published in the San Dimas Press for August 27.



Early Records of Citrus

Continued from Page 461

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

"Palm Valley," which is the name W. Shepard, and under which she under which what we now know as acquired ten acres from W. H. & "Palm Springs" was then designated. H. W. Farrell on April 11, 1885,

Land values of bearing and non- and the one transferring an adjoining bearing orange groves are given in ten acres to C. Weld Waite by A. one of the advertisements reproduced L. Whitney on Feb. 23, 1887, have in one of the cuts herewith.

orange trees today, after almost 50 on the part of the owner.

There are many references to mother of C. Weld Waite, Fannie been preserved with the other histor-While this reference has nothing ical papers treasured by the present



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

to do with citrus growing, there was owner, Howard Waite, and were exan item in one of those early copies hibited to the writer. ing from the Press article: "Instead variety. of the place where the doomed sinner Since that time Howard Waite has Homer' tells his hearers of four places ing. where, dressed in nothing more sub-

of the Riverside Press which told of When the senior Waite took the a new religious sect which had been property over it was planted to barley. proposed by a man in southern Cali- Soon grapes and oranges were set out. fornia which put an entirely new As the orange industry grew in imaspect on "hell" from that generally portance and it became apparent that entertained as orthodox. This man Riverside was particularly well adaptwas, according to the article in ques- ed to citrus growing, the entire 20 tion, trying to induce people to leave acres were planted to oranges, almost California and go to Dakota. Quot- entirely of the Washington navel

fries on the coals and drinks melted added 20 acres more to the planting. lead throughout eternity, 'Prophet There are today 40 acres in the hold-

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.

stantial or close fitting than a linen with Mr. Waite, scarcely a word was sistently through the California Fruit quality of the fruit they raise and Mother Hubbard, the lost are sub- said about the cultural care which is Growers Exchange. The elder leave the intricate marketing problem jected to temperatures ranging as low being given the grove and what is Waite was on the board of directors to a well managed association, disas 300 degrees below zero and lower." being done for it today by him. But to 1914 and was an excellent cooper- trict and central Exchange. In that But getting back to citrus: That it was scarcely necessary to make any ator. His son, Howard, has followed way they would best serve their own the elder Waite laid the foundation comment for the condition of the principles laid down by his father. interests and those of the industry as

pearance and the actual production the grove spoke for themselves. There board of directors of the Riverside of those sturdy Washington navel was every evidence of excellent care Heights Orange Growers Association

of which C. N. Funk is manager.

There is nothing observable about Not long ago Howard Waite ex-The interesting old deeds to the trees which would indicate any- pressed himself to another Exchange



.: SWEET OR SOUR STOCK. ::

STABLE, You pay your money and take your choice.

SADDLE HORSES

IVEN.

MILL CO.,

BLINDS. et Sound Pine.

LASTER. LLATT, Agent. micals--

Don't forget.

MILTON, VERSIDE.

RIVERSIDE, CAL.

A. J. & D. C. TWOGOOD, Uranges, Lemons, Kaisins,

:: WAREHOUSEMEN, :

Agents for J. B. White's and K. B. & S. Portland Cements.

Raisin Labels, Paper and Box Material are Unsurpasse

Commission Merchants Wholesale Grocers

AND DRIED FRUITS. Carson Trays, Sweat Boxes and Raisin Boxes Ready for Delivery.
COR PACHAPPA AVE AND SEVENTH STS.

DOWN & ALGUIRE.

Pioneer Brick Works

BRICK WORK, PLASTERING & MASONRY BOARDING:

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.

well is evidenced by the thrifty ap- trees and the general appearance of He is and has since 1922 been on the

thing but a record of continued good grower as feeling that growers would production over a long period of time. be much better off in every way in Since 1900 the fruit from the the long run if they would devote Waite grove has been marketed con- their chief attention to improving the

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. 118-128 N. Los Angeles St. Los Angeles Drs. WAY & SHE DRS. JENKINS & K. D. SHUGART -:- PARK MODEL - G

BINE IN E

LEADER

AND

Years O A GO-



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.

The Arizona Tractor Co. 138 So. First Ave. Phoenix, Ariz.

B. Hayman Co., Inc. 118-128 N. Los Angeles St. Los Angeles, California

May-Bemis Company 524 East 1st Street Santa Ana, California Charles Cooper 2170 Thompson Blvd. Ventura, California

Holly Sumner 649 Fourth Avenue San Diego, Calif. R. A. Wheeler 3347 E. 8th Street

Riverside, California Harry J. Farason 558 W. Second Street Pomona, California

Harry J. Farason 525 N. Citrus Avenue Covina, California

Edward Keasbey 234 S. Greenleaf Ave. Whittier, California

Valley Tractor Co. 424 Main St. El Centro, California

THE CLEVELAND TRACTOR COMPANY CLEVELAND, OHIO

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

result in the eradication of those pests. thoroughly discussed. It was the This was emphasized at the meeting of the Lemon Men's Club in the Sunkist 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

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 discusion 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

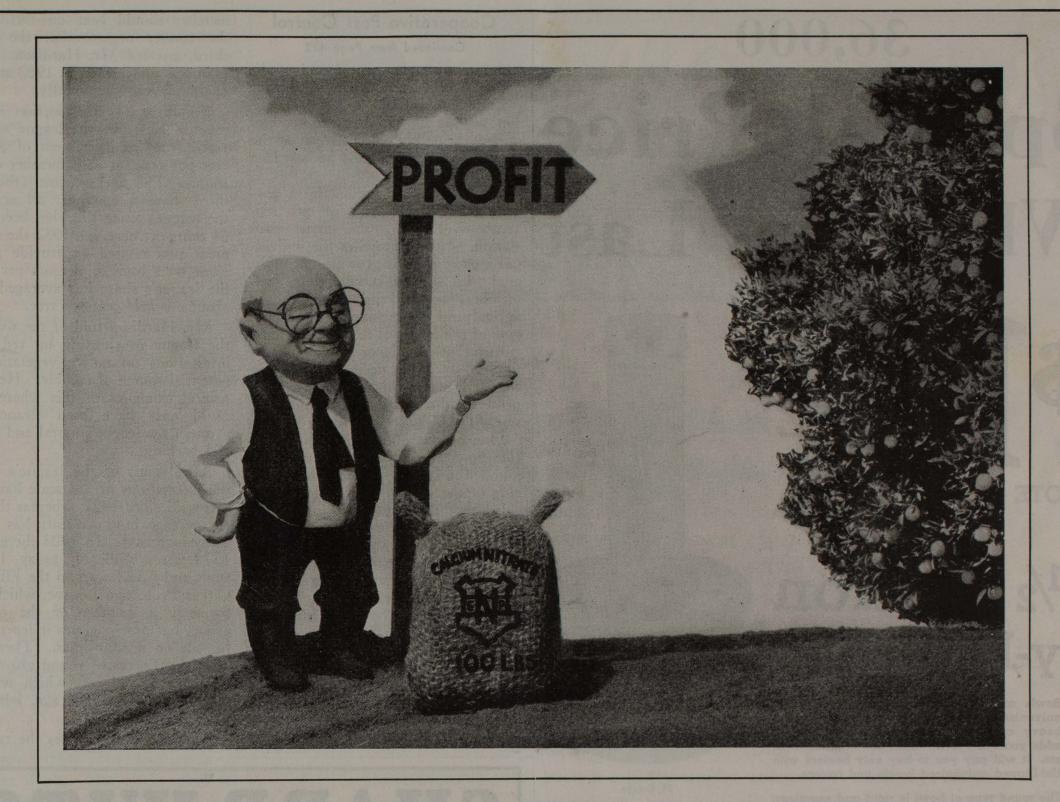
PERSISTENT, concerted attacks distribution. The league was the on citrus insect pests, in areas outgrowth of a meeting held in Fill-wherein the scales have not bewherein the scales have not be- more early in 1922 at which the eradcome too generally widespread may ication of red scale in the county was



A. C. Hardison

concensus of opinion of growers attending that meeting that they should act as a unit and undertake a planned Continued on Page 474





THE SIGNS POINT TO CALCIUM NITRATE

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

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

PACIFIC COAST DISTRIBUTORS

October, Nineteen Thirty-six

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

October, Nineteen Thirty-six

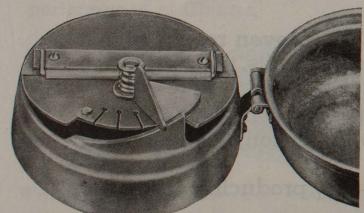
Special Price While they Last

NOTE THESE FEATURES OF THIS

7½ Gallon Hy-Lo Heater

- 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.
- The round type of bowl is rigid and seamless. Capillary attraction is reduced to a minimum.
- These HY-LO Heaters are safe, easy to light and simple to operate.
- Economical to operate because oil consumption is readily controlled by hinged regulator. You burn only the amount of oil necessary for efficient heating under

HY-LO AUTOMATIC REGULATOR



MAKES "A ONE-MAN HEATER'

24 Gauge

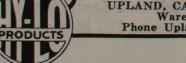
Fits any heater. With this device, the heater is lighted by merely throwing back the hinged regulator plate and applying the torch in the regulator way. No follow-up man is necessary. With the HY-LO Automatic Regulators, you pay for them once, save with them always. Before you buy any orchard heater,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

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

ROUND-SQUARE-COKE HEATERS

SCHEU Products Company, Ltd.

LOS ANGELES, CALIFORNIA
Consolidated Building
Phone TUcker 9008



UPLAND, CALIFORNIA Warehouse Phone Upland 315-114

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

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 de-

pends 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 financost of treating his orchard, the asso- three years.

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 onethird 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, cing of the work. It was finally de- the infestations of red scale have not cided that the grower having an in- increased since 1922, whereas the citfestation on his property was primar- rus acreage in the county has mateily interested and should bear a por-rially increased. In 1923 there were tion of the burden; that the associa- 8338 acres affiliated, today 18,541 tion of which that grower was a acres and 6,122 acres in the Fillmore member was interested in having the Citrus Protective League, which was grower clean up the scale; and that formerly a member of the county all growers in the county were in- group, but now operates independentterested in having the sources of scale ly, but on similar lines. There are infestations adequately treated. It some 9250 acres of young groves unwas finally decided that the growers affiliated as yet, but which will be should bear directly one-third of the when they become of age, which is

ciation of which that grower is a The league determines the type of

SHARP WITS



DICTATE THE USE OF -ZINC-

FOR THE CONTROL OF MOTTLE LEAF

Sharp Pencils

DICTATE FOR ECONOMY AND DEPENDABLE RESULTS THE USE OF KIRKSON BRAND

MANUFACTURERS OF ZINCOX

AGRICULTURAL ZINC **PRODUCTS**

ZINC OXIDE — ZINC SULPHATE — ZINC SULPHATE SOLUTION

ASK YOUR JOBBER OR DEALER

Morris P. Kirk & Son, Inc.

2717 So. Indiana Street

Los Angeles, Calif.

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.

October, Nineteen Thirty-six

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

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

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.



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 overheaddistilled 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



burns cleanly—at lower upkeep cost per horsepower

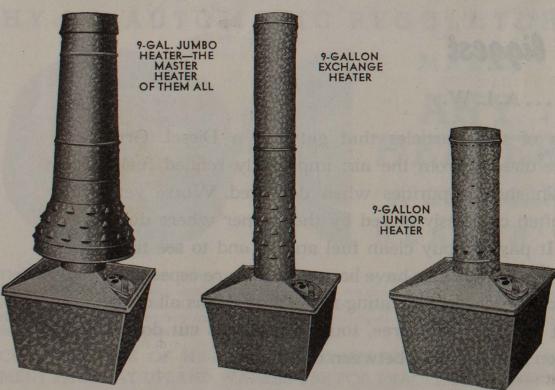


National-Riverside Heater performance is the best evidence you can get of sound heater investment. Citrus crops worth millions of dollars have been saved by these heaters.

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.



Also Manufactured With ROUND BOWLS

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 aphis 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."

stated that any questions of damage handling pest control for its members are handled by arbitration; that the since 1908, now operating four company has been able to operate the strings of fumigation tents, two spray past few years without borrowing working capital; and that the company is independent of any marketing tion, said Mr. Webber, are that by association.

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 In answer to a query, Mr. Moon stated that his association had been rigs and one duster.

Advantages of this type of operahaving their own entomologist, ac-The advantages and disadvantages quainted 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.

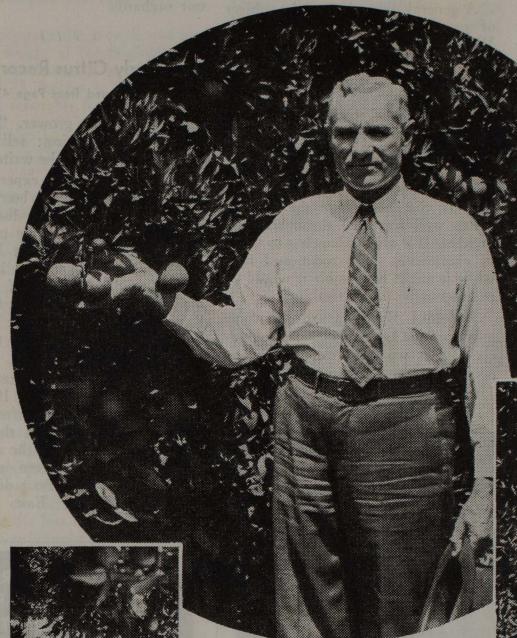
WESTERN has been working with the citrus industry for many years helping them build and create brands and labels that sell. Let us help you increase your sales with a smart new label. No obligation for a free estimate on your problem. Call us—TRinity 2641.

WESTERN LITHOGRAPH COMPANY

600 EAST SECOND STREET

LOS ANGELES, CALIFORNIA

The NATION'S BEST



THIS YEAR'S CROP is

pretty fair, Henry Pieper says. Nearly half a field box

October, Nineteen Thirty-six

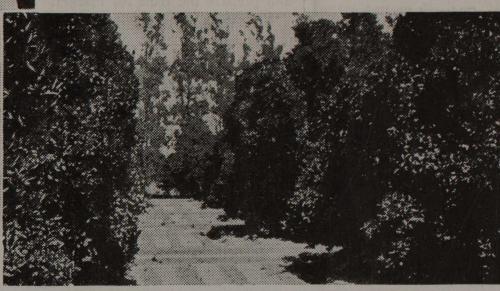
SALESMEN

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.



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

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

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

"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 storekeeping 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.

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.

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

BRIQUET HEATERS

SOLD BY

Adams & Company

VAndike 8548 2144 East Seventh Street Los Angeles, California

Special 1936 Price

Write Us for Information

We Are Agents For:

California Fuel & Utilities Briquets Adams & Company Heavy Duty Heaters, Oildwood 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 spread in the cost of fumigation.

Mr. Webber.

stated that if they did poor work or were arbitrary in any way it might if properly handled might draw members into the association. Another commercially impracticable. disadvantage is that it places an and prepare the fruit for market.

Mr. Webber stated that their pol-

years and spray rigs 25% per year.

A general discussion on the subject our orchards. of pest control was led by R. S. first class work is assured, it is done Woglum, Exchange entomologist. at the proper time and the small Mr. Woglum praised what had been grower gets just as much attention as done in those areas which had set up the large grower. This work by the protective districts. A number of association has also narrowed the others have more recently set up control or eradication areas and Mr. Work is done only under signed Woglum stated that it would be a authorization by the grower, said fine thing if through these efforts the few scale infestations might be cleaned As disadvantages, Mr. Webber up. In districts where the scale is pretty well scattered throughout all orchards it is almost hopeless to think have an effect on membership, but of eradication. He mentioned that while it might be possible it would be

Harold J. Ryan, agricultural comadded burden on the association man- missioner for Los Angeles county, deager whose main job is to harvest clared that we must stop looking at pest control as an individual menace. "It is a community problem, just as

icy had been to depreciate the equip- are fire and flood control," he added. ment fast enough to pay for replace- He asked if it were not possible to set ments—fumigation tents in about five up some kind of community control to stop the build-up of these scales in

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

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

The TRADE WILL ONLY PAY FULL PRICE FOR FRUIT THAT IS FULLY AND EVENLY COLORED" says prominent Fruit Exchange Executive

This is especially true of Citrus fruits...fruits which will not color, fully and evenly, by other processes. No wonder, then, that leading Fruit

Exchanges and Associations, working with U.S. Department of Agriculture, have sought ... and found in the use of Ethylene Gas... a method that does color mature fruit fully and evenly. Result! Ethylene colored fruit brings top prices . . . gets to market when the price is right, too ... because fruit can be completely and evenly colored, when wanted. Colored in a short time, too ... on the average 1/3 of the time it takes by other methods. Cost? Only a few cents a full carload of fruit.

Learn about Ethylene fruit coloring. Write for the free Booklet we offer ... talk, too, with your Exchange

Grow tomatoes for local trade? 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.

This 20-page Book-let tells the story of Ethylene Gas for coloring mature fruit and vegetables Write your nearest office:



CARBIDE AND CARBON CHEMICALS CORPORATION 2305 East 52nd St., Los Angeles 114 Sansome St., San Francisco, Calif. Warehouses in Los Angeles, Tampa, Jacksonville, and other principal cities

Unit of Union Carbide and Carbon Corporation

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 leafytwig 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

More **Economical** Fruit Washing

You can cut the costs of fruit washing by the use of Wyandotte H. D. C. Not only is less Wyandotte required but the solution will last longer and rinse more freely.

Because Wyandotte makes strong, lasting suds the fruit comes out with a glossy appearance. Ask your jobber today for



Wyandotte H. D. C.

The J. B. Ford Sales Company

117 W. 9th St. Los Angeles, California Phone VAndike 8267

360 Flood Building San Francisco, California Phone Sutter 1737

short enough so as not to produce grees C inclusive and dropped at 35

transplanted.

The data in table 2 indicate that

any trends in the growth of the cut- degrees C to values equivalent to temperatures between 19 degrees and The first 14-day period was al- 23 degrees C. The losses from grapelowed as time in which the cuttings fruit leaves were less than those of might recover from the shock of being 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	May 13	3-27, 1935	May 27-June 10, 1935		
Degrees	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	

increasing soil temperatures to 31 de- leaf area.

the water losses per unit of leaf area perature affects the growth of citrus in the lemon cuttings increased with and also the water loss per unit of

PETROLEUM COKE

FOR ORCHARD HEATING

Low in Ash Quick Starting

Manufactured by

CALIFORNIA FUEL AND UTILITIES, INC.

Plant: Compton, California Phone: Compton 10261—LAfayette 1147

Distributed by

Adams and Company 2144 East 7th St. VAndike 8548 Los Angeles

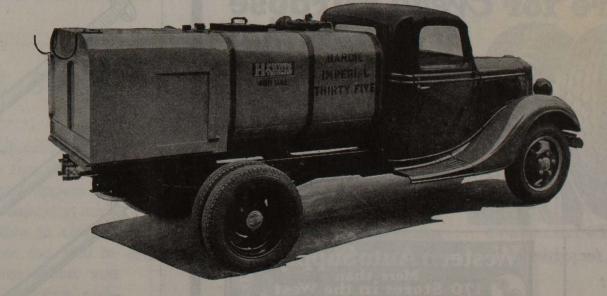
Low Upkeep and High Performance

OST of upkeep, length of life, measure of performance—these are the vital facts about a sprayer. For the yield of the grove must pay for the spraying, and what you have left after all costs are paid is far more important than what you had to start with. You want the sprayer that can be maintained in operation at the very lowest figure for operation and upkeep cost. Let us give you the record of countless Hardies and then see if any other sprayer can match

Is not the sprayer that gives perfect service for fifteen or twenty years better to own than one that is worn out in eight or ten years? Look at the Hardie record for length

Consider the sprayer in the light of gallonage required. If you want 35 gallons per

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 7½ 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.



The Hardie Manufacturing Company

222-224 North Los Angeles Street

Los Angeles, Calif.

Faster Washing

Less Decay . . Lower Cost 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 tan-

You get less decay and you wash the fruit at less cost.

dem submerged type of washer.

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 in-

CITRUS MACHINERY COMPANY

DIVISION OF FOOD MACHINERY CORPORATION

Sales Office: 333 East Third Street, Los Angeles

Factories: Riverside, Anaheim, Lindsay



Western Giant SURE-GRIP 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 . . . 4:75-19 (5:00-19) and 4:50-21 (4:40 and 4:75-21) 4 full plies.

A Tire for Every Purpose at a Price that Saves You Money

> TWELVE different lines, all ruggedly built of finest materials. Make "Western Auto" Stores your tire Headquarters and SAVE.

Ask for Low Prices on your size. Ask about Easy Payment Plan.

Everything for Your Car at a Saving!

BATTERIES
IL • GREASES
ACCESSORIES REPAIR PARTS OOLS PAINT SEAT COVERS CAMP GOODS BRAKE LINING BICYCLES

Motorola CAR RADIOS HOME RADIOS ISHING TACKLE Western Auto Supply Co More than 170 Stores in the West See Telephone Directory for Street

LOS ANGELES-MAIN STORE: 1100 S. GRAND DISTRICT MAIN STORES CIT 9-36

Oakland Store Denver Store Seattle Store 2355 Broadway 1376 Broadway 7th and Denny

115 stores in California 8 stores in Arizona 14 stores in Colorado 2 stores in Hawaii 7 stores in Idaho 5 stores in Montana

2 stores in Nevada
4 stores in New Mexico
15 stores in Oregon
5 stores in Utah
20 stores in Washington
4 stores in Wyoming

Insect Pest and Plant Disease Interceptions Recorded by State

DERUSAL of the report of the animal pests of outstanding importagriculture on the insect and other in coffee berries, once in passion fruit animal and plant disease interceptions and once in grapes from Hawaii; at California quarantine inspection Mexican orange fly, a serious pest points during 1935, shows the tre- of citrus, taken in oranges from mendous value of this type of work Mexico; a fruit fly and an undeterin keeping from our state dangerous mined trypetid taken on four occasinsect pests or diseases which if estab- ions in banana trash from Panama; lished in our fields or orchards might a citrus white fly on Osmanthus sp. result in millions of dollars of dam- from Japan; Philippine orange moth

automobiles or personal baggage of steamer and automobile travelers.

maintains inspection stations at the sect (Pinnaspis minor) was taken on three major maritime ports (Los An- 187 occasions from nine countries on geles, San Francisco and San Diego) 16 different hosts. 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 commission-

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 Ecuador, Japan and Puerto Rico, on 1525 species.

bureau of plant quarantine of ance included the following: Medthe California department of iterranean fruit fly taken three times taken on two occasions in sour limes This report lists the animal and from the Philippine Islands; the camplant disease pests taken in commodi- phor scale, a serious citrus pest, was ties moving in foreign and domestic taken 50 times from Japan on grapecommerce or being carried in private fruit, lemons, limes, oranges, tangerines and pomelos, the same pest was intercepted three times from China The bureau of plant quarantine on pomelos and oranges; a scale in-

Pathological interceptions at the maritime ports included 956 lots of plant material infected 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 oranges from Brazil, Japan and Pan-Interceptions of insect and other ama, and on pomelos from China;

KEYSTONE NOTED FOR THEIR HOLDING POWER 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 copperbearing steel, they meet all requirements of the RED CEDAR SHINGLE BUREAU. Clean, uniform, smooth nails, easy to

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

KEYSTONE STEEL & WIRE CO. LOS ANGELES, CALIFORNIA 146 N. Los Angeles St. Phone Michigan 7285

DUNHAM, CARRIGAN & HAYDEN CO. San Francisco, Calif.

citrus black spot on lemons from but as Gainesville is considerably ada, West Indies, South Africa, Pu- which is in the heart of citrus grow- never show signs of granulation. erto Rico, Panama, Palestine, Isle of ing districts of Florida.

October, Nineteen Thirty-six

Border Stations

Pines, Louisiana and Texas.

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 livpests, comprising 934 different spe-

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

Dr. Camp, Florida Citrus Specialist Visits Here

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. Florida at Gainesville, Florida. Much bloom is likely to be small, juicy and of his work has centered on citrus sweet.

Communications

1111

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 ing insect, animal and plant disease 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 circular gives a detailed list the maturing fruit, whose growth is of the pests intercepted, the host ma- evidently capable of stimulation beterial and the place of origin. Copies yound the capacity of the tree to manof this report, special publication No. ufacture the sugar and acid constit-141, may be secured from the state uents of the juice. The facts which department of agriculture at Sacra- suggest this conclusion are as follows:

1. Granulation is found only in Valencia oranges and not in navels, which attain full maturity before the season of active vegetative growth.

2. Granulation is more common in the larger sizes. 3. It is more prevalent when a

light crop promotes rapid growth of individual fruits.

4. It is more severe near the coast than in the interior districts, where high temperatures doubtless slow up growth to some extent.

5. Fruit from late off-bloom, For many years Dr. Camp has been which makes a rapid growth in the on the staff of the agricultural expe-spring and summer, is usually large, riment station of the University of dry and insipid, while that from early

taken 248 times on grapefruit, limes, sible there. Recently Dr. Camp has rigations, resulting in retardation of growth. pomelos, oranges and tangerines from been transferred to the charge of the growth. The oranges from these trees Japan, China, Mexico, Florida, Can- experiment station at Lake Alfred are smaller than the average and which is said to reduce granulation, is it not possible that this retards

growth by clogging the pores of the

Possibly the variations in individ-

6. In my own grove there are cer- ual trees found by the Citrus Experi-Australia, and on lemons and oranges north of the citrus growing areas of tain trees which, because of gravelly ment Station might be traced to soil, from Japan; citrus melanose was that state, best results were not pos- soil, often become wilted between ir- water or other conditions which affect

Since granulation does not always seem to be directly correlated with rate of growth of the fruit, condi-In regard to the whitewash spray tions affecting the production of sugar and acid must naturally enter into the problem also.

> Very truly yours, ROBERT S. WOODS.



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.

Broadex 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

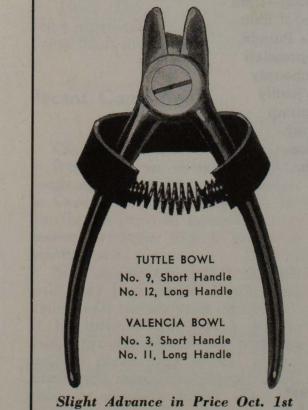
BROGDEX SERVICE

BROGDEX MACHINERY

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

BROGDEX COMPANY, POMONA, CALIF.





During the Valencia season the demand for the new Corona Orange Clippers has exceeded our capacity, making it impossible to call on

WE ARE SORRY

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

Corona Clipper Co. Corona, Calif.

Company, or

THIS FALLas 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.

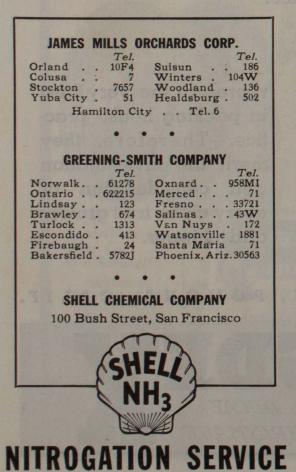
That is why so many orchardists are "Nitrogating"—feeding nitrogen to the trees by applying Shell NH3 in the irrigation

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 NH, 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.



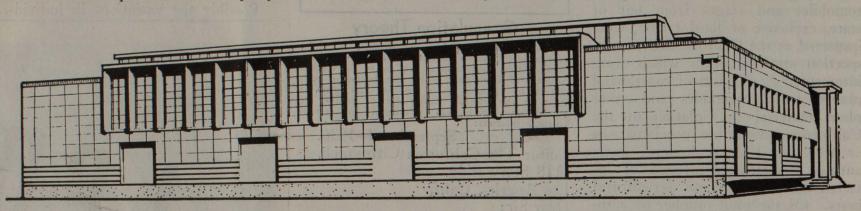
Santa Paula Orange Ass'n and Rancho Sespe Constructing Plants

tion for the 1937 season, according to has been selected as yet. Roy C. Wilson, Santa Paula archiis supervising its construction.

Santa Paula's new citrus cooper- Association and serves on the board basement walls being of concrete and

This association was formed to destroyed by fire in 1930. The Mupu to resist heat. better handle a portion of the rapidly Association erected a new plant at an- Lighting will come from the saw-

ative, the Santa Paula Orange Asso- of directors with C. P. Foster, Gene the superstructure of diagonal sheetciation, will have a new packing Gardner, Wm. Boosey, Leon Pressey ing covered with 2x4 foot insulation house of latest design ready for opera- and Percy Strickland. No manager board for waterproofing, and which will be put together with horizontal The plant under construction will and vertical metal strips. The extect, who designed the plant and who occupy the 145x100 feet site of the terior will then be painted in light old Mupu citrus house which was lead and oil paint, for durability and



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

western fringe of Fillmore Citrus ladder storage space.

increasing volume of orange productother location in replacing the burned tooth roof and the bank of 14 wintion in the vicinity, the existing facili- plant. In addition, a lot 125x150 dows, each 12 feet in height along ties being taxed nearly to the limit of feet in size, directly across the alley, the north wall, the south and east their capacity. The acreage served has been purchased which will pro- walls being blank. Offices and rest lies principally in the area east of vide future empty box storage, some rooms on the mezzanine will be Santa Paula canyon and joining the Mexican quarters, garage and picking lighted from windows in the west

Association. Ben C. Hedrick is pres- The building will be of concrete The interior—ceilings, walls and ident of the Santa Paula Orange and stud frame construction, the 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.



VICIOR 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 evestrain in citrus packing and fruit

October, Nineteen Thirty-six

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 in-

The entire basement of the new addition to the Sespe packing house will be insulated, probably with twoinch 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.

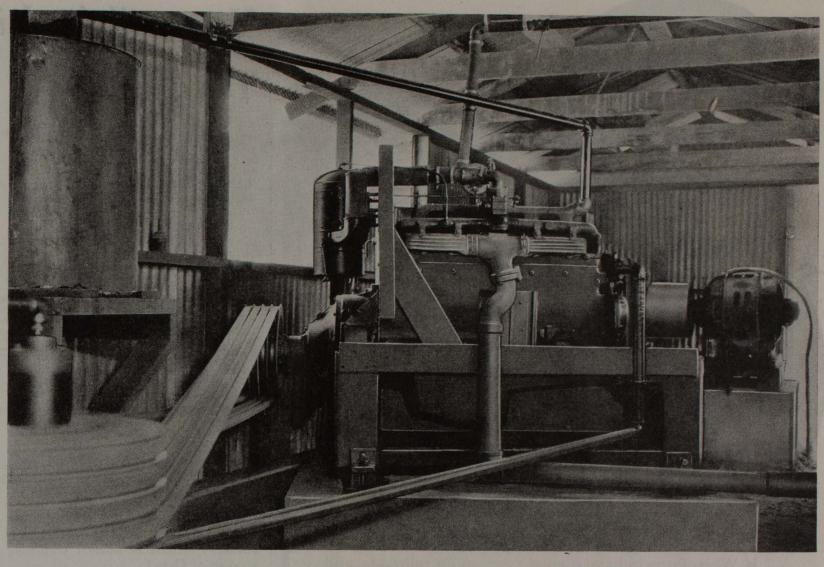
Homer Cheek is manager of the Sespe lemon house and the construction is being done by day work through the ranch construction department, and is directly in charge of James Duncan of the Rancho Sespe organization. Roy Wilson of Santa Paula designed the new unit. 1111

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

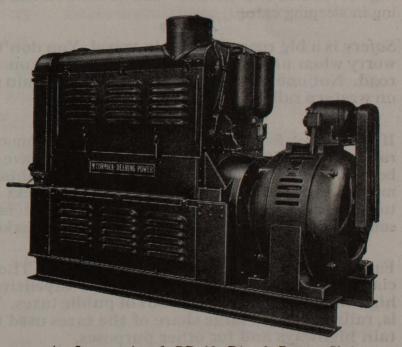
Operating Costs Reduced 663% by INTERNATIONAL POWER UNIT

OWERED 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 ¼-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

INTERNATIONAL HARVESTER COMPANY

734 Lawrence St., LOS ANGELES

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 "haywire" 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.

progress.

achievements, appreciate the public's good will and increased patronage, and pledge continued

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

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 animals 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

Junior Model Pipe Line Heater

Up to the present date our sales have far exceeded our

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

Cone Louver Type Heater

This cone louver type heater is exceptionally efficient and

Equipped with Dunn down-draft tube, hinged stack cap and hinged regulator. We carry a full line of replace-

WAREHOUSE

705 E. First Street

total volume for last year. There must be a reason!

gives maximum heat liberation close to the ground.

has given good protection under all frost conditions.

ment parts for orchard heaters.

MAIN OFFICE

701 Consolidated Bldg.

CALIFORNIA ORCHARD HEATER COMPANY

Los Angeles, California TUcker 9008 Pomona, California Phone Pomona 2749

THE BALLOT BOX

IN this business of selling mer- just sawing wood. The country chandise, 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 the twelve or fifteen million Amercampaign promises. We believe in

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 ican farm homes who seem to think Sears is still doing all right by them.

* * *

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!

@ 1936 S. R. & Co.

Navel Pruning Studies Continued from Page 460

benefit of the growers and to learn pared with the yields of the unpruned possible improvements in their practures for the two years following the

Presentation of Data

to 1935. The average for the 21-year shown in the accompanying table. period 1915-1935 following the first pruning in 1914 is also presented more inside growth on the pruned with the averages for the entire group trees during the three years subseof pruned and unpruned trees.

MEN BEHIND THE G

Discussion of Results

of decrease in yield of the pruned for the season before the differential the pruning the greater the loss of ing seasons and for the period 1919 with those of pruners 1 and 5 as pared with that from the unpruned orchard.

While there was apparently a little quent to the first pruning the amount

of this growth and its bearing on pro- ing must be added to this loss which

lemon and Marsh grapefruit orchard, as soon as possible after pruning.

The pruning systems employed by duction was negligible so far as could was an average of 75c per tree in the all of the pruners resulted in sharp be ascertained and this condition has pruning plots but amounted to someobject of obtaining the facts for the and significant losses of crops as com- held uniformly true up to the present what less for the remainder of the orchard as a little more care and During the three-year period fol- time was used in the pruning plot initial pruning. As a rule the amount lowing the 1914 pruning, the fruits than in the balance of the grove. The from the pruned and unpruned trees pruning of the 250-acre Eureka lemon trees was about proportional to the in the experimental plot were graded block was much more severe than in The table (see page 460) shows the amount of foliage cut off the trees by and sized separately. Analyses of these the Washington navel orange and average yields in the pruning plots the different pruners, the more severe data show that there were no signifi- Marsh grapefruit blocks. Furthercant differences, at any time, either more, the pruning of the trees in all pruning was done together with simi- fruit as illustrated by the results of in the commercial grades or sizes of of the experimental plots was less lar averages during the three succeed- the work of pruner 4 as compared the fruit from the pruned as com- severe than in the remainder of the

The pruning has had no apparent An estimate of the value of the effect on the trees in regard to disloss of crops for the three-year period eases. Care was used to wax over all following the heavy commercial prunexcept the very small cuts immediately ing of 1914 in the 750 acre Washing- and the tree trunks and main limbs ton navel, Valencia orange, Eureka exposed to the sun were whitewashed

in which pruning plots were located, The yield results for the first seabased upon prices received by the son from the pruned trees as comowners of the property for the fruit pared with those from the unpruned shipped during that period, was about ones were so strikingly low that a million dollars. The cost of prun- all pruners were discouraged from

IT 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.

mbine to make for satisfactory business dealings. Because these are as much a part of the Decco Process 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 ouses now using Decco for

sound business organization

ble pricing, equitable agree-

ments, reliable equipment,

lependable service and courous co-operation must all

-honest management, sensi-

In every

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

decay control.

WALLACE & TIERNAN SALES CORPORATION

2311 East Eighth St., Los Angeles, Calif.

171 Second St., San Francisco, Calif.

write at once for complete information IOHN BEAN MFG. CO. DIVISION of FOOD MACHINERY CORPORATION

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. Santa Ana and Anaheim • See your nearest BEAN dealer or Jones & Dodd Santa Paula E. M. Cope Commercial Company San Diego Tractor & Equipment Co. San Diego and Escondido 333 EAST THIRD STREET · LOS ANGELES

Sold by...

Glendora

Foothill Supply Company

North Pomona

M. Eltiste & Company

San Antonio Supply Company

ROYAL SPRAYERS

further pruning of the trees in their study reported above and some others, respective plots excepting for a little many observations have been made thinning of the new growth. At vari- as to the treatment and care of inous times during recent years the jured, decadent and diseased trees writers have carried out a very light which will be summarized very briefly 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.

October, Nineteen Thirty-six

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

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



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 yearout service, these sturdy turbine pumps cannot be equalled. Let us show you how you can save on water costs with a SUBMERSIBLE.

SUBMERSIBLE MOTORPUMP COMPANY, LTD.

3040 East Slauson Avenue (JE 4177) Huntington Park, California

at this time.

foliage of navel orange trees often seem more serious at the time when the damage occurs than subsequently as wide observations have shown. For this reason it is usually a good plan

Continued on Page 488

Structural Pruning We remove inside timber—to create more space—light and

avoid heavy cuts.

Hot wind or frost injuries to the

Pomona: Ph. 4236

vigor for more and better fruit wood.

CLARK TREE SERVICE

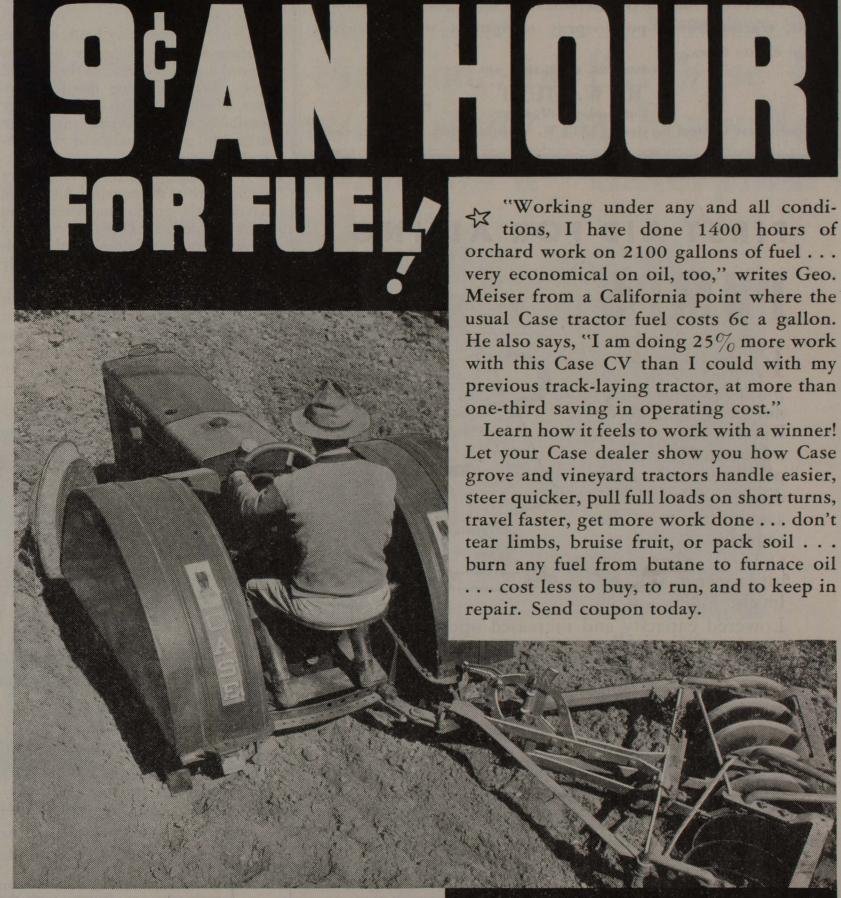
H. D. CLARK, Mgr.

LET US SHOW YOU

On Young Trees: We spread needed frame limbs apart to

Santa Paula: Ph. 217R1

CASE OWNERS REPORT COSTS AS LOW AS



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. Allsteel frame, triangular hitch, extra stiff beams and standards for deep work, tough standards, 24 to 88-inch cut. struction save fruit.

CENTENNIAL PLOW Here is 100 years of plow

progress built into an orchard plow. Clearance to handle heaviest cover crops. Highspeed 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 soils, short twists and turns. and bracing. Self-setting safe-Points easy to sharpen or re- ty release hitch. Closed place. Four sizes, 3 to 11 wheels, and low-down con-

STEEL PLOW BUILDERS SINCE 1837

J. I. CASE	CO., Dept	. K-14,	Oakland,	Calif.
Dlagge se	and ma for	ablia	ation) vo	ne bool

and implements for grove and vineyard work.

Postoffice_

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

Office-313 Bush St.

Santa Ana, Calif.

Phone 4871

HERE'S HOW—

To reduce limb-breakage and fruit damage! We use lowbuilt, 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.

FIRST AID FOR AILING

PUMPS

EVEN the best pumps get out of order now and then. Runners may require adjustment or replacement to fit conditions. New bowl assemblies may be required as the result of wear or changing water levels.



Lowered capacity and increased operating cost are the first symptoms of an ailing pump. It's the signal for a thorough check-up to find out what is wrong and how the trouble can be corrected.

You'll find that this periodic check-up is worthwhile. Possibly only a minor adjustment is needed to restore your pump to its original efficiency. And even if tests show that complete new equipment is needed, the saving in power costs may easily pay for the new installa-

Remember, when in doubt you can always get expert advice from an Edison pump specialist. His services are available without cost or obligation.

> SOUTHERN CALIFORNIA EDISON COMPANY LTD.



CALIFORNIA'S Electrical Age HAS JUST BEGON

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 sary. As a rule much less pruning with, based upon information gained than otherwise would be the case.

from any cause should be removed by experienced reported in this article. careful pruning. When large limbs split along the grain of the wood it priate to point out again in this conmaterial as soon as possible after they strains such as the Australian.

care should be taken to avoid any scaffold limbs.

navel, little or no improvement in tree top. their production has been accomplished Well grown young orchard trees through pruning. Sometimes the yields of the best Washington navel orange of such trees have been temporarily strain need but little pruning atten-

Individual tree pruning care is adventitious growth on the tree now believed to be requisite in most trunks, thinning the growth in the navel orange groves. There is no tree tops in some instances, and the question in the writers' minds that treatment of any branches that have such care is desirable and essential in been injured, include most of the

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 no more pruning be done than neces- pruning program is presented herewill be done if this plan is followed through wide observations of commercial pruning over a considerable Small to medium-sized limbs broken period of time and the experimental

In the first place it seems approsometimes pays to use bolts to draw nection the importance of securing and hold the sides together until the inherently fruitful strains of the wounds are healed. It is usually a Washington navel orange, in which good plan to cover the larger prun- the trees require much less pruning ing cuts with some suitable protective care than those of the vegetative

In the nursery, the pruning of the Dead, or interfering limbs or those young trees is largely confined to bearing off-type fruits can often be heading them at the proper height pruned out with benefit to the affected and the spacing and training of the trees. When pruning diseased trees main branches which are intended as

possibility of transferring any disease In transplanting, the cutting back to healthy trees by means of the prun- of the main branches should be done systematically, care being used to In the case of trees of vegetative encourage the foundation of a strong, strains such as the so-called Australian well balanced framework for the

increased by the girdling practice. tion. The removal of any undesirable



THE Oxnard Citrus Association as the building. Then too, these big, I can't take any chances with the lightweight boards are applied rapidly lemon production from some 3300 and easily—an important consideration acres belonging to grower members. in a building 300 ft. x 420 ft. When they built the new William Ross And all Celotex Cane Fibre Products Packing House at Hueneme, they were are protected against destruction by Dry mighty careful in choosing an insulating Rot, Fungus Growths and Termites material. It had to be right on every (white ants) by the Ferox Process count!

Naturally they chose Celotex! No Before you build or remodel any other insulation offers ALL these im- structure, be sure to see or phone your portant advantages: permanently efficient nearest Celotex Dealer. He will give insulation; struc-

tural strength;

exceptional dur-

ability—Celotex

will last as long

INSULATING CANE BOARD

you accurate, money-saving ing your insulation problems.

THE CELOTEX CORPORATION, 708 Architects Bldg.—Los Angeles—MU 1196

pruning care needed so far as our ob- any now available for study. Brushservations have gone.

trees of the best strain, grown under sirable practice in some cases. favorable environmental conditions, Pruning is a rather costly orchard little pruning has been necessary in operation and when severe the trees the orchards studied thus far. In usually require two or three years to some instances an occasional brush- return to their normal fruiting proing-out of the dead or decadent duction. In some examples which growth may be advisable or some have been observed it seems likely careful thinning of dense top branches that the money spent for pruning may be necessary. After frosts, desic- could have been expended much more cating hot winds or other extreme economically and advantageously for climatic conditions, the growth that improvements in irrigation, fertilizais finally determined as seriously in- tion or other cultural practices. jured or dead should be removed by It is believed that a safe principle judicious pruning.

stock selection, adequate cultural care words, if in doubt don't prune. or effective protection from adverse climatic influences.

Conclusions

A review of the experimental evidence summarized in this report 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

Antrol Tree Cups Save on Spraying

 ANTROL protects your trees from ants nd allows beneficial insects to kill aprils, scale and mealy bugs.



• ANTROL is harmless to trees in the rainproof, leak-proof and non-spill containers.
Specially designed for use in groves.

LOW 1936 PRICES

Antrol Special Syrup (packed in 5 Gallon cans) \$0.95 per gallon.

Antrol Paperoid Orchard Containers (packed 1,000 in carton) \$9.75 per M.

Antrol Paperoid Orchard Containers (packed 3,000 in carton) \$9.50 per M.

Special Permanent Tree Brackets, \$2.75 per M.

Order Through Your Exchange or Packing House.

ANTROL

Rids Groves of Ants Antrol Laboratories, Inc., 3071 E. 12th St. Los Angeles, California

ing out of mature trees to maintain With full-bearing navel orange the capital investment may be a de-

is not to prune if in doubt as to its In all instances it should be kept advisability or at least to wait until in mind that pruning is not a sub- a definite need for the proposed prunstitute for intelligent bud and root- ing has been demonstrated. In other

ords showing sustained high efficiency and long ing costs of WINTROATH installations.

WINTROATH Enclosed EndSeal Impellers Offer a 5-Year Record

of Pumping Economy.

Test after test, made by impartial engineers, demonstrate conclusively the long time economy of WINTROATH Enclosed EndSeal Impellers.

Proven under actual operating conditions over a 5-year period, WINTROATH EndSeal Impellers are offered for both new and old installations with a guarantee of long-range low-cost operation.

WINTROATH PUMPS, Inc. Alhambra, Calif.

is the Time to Purchase the Kind of Tractor You Really Need leads to the conclusion that any pruning that was done was detrimental to the yields of the pruned trees and . . . and that means a "Caterpillar"



"Caterpillar" Diesel Orchard Tractor Owned by Camulos Ranch, Piru, Pulling 11-Foot Killefer Double Disc Harrow.

Now that conditions have improved it is more important than ever that you should cultivate your orchard with the kind of tractor you have wanted to own the kind of tractor you really need.

"Caterpillar" Tractors earned their outstanding reputation by doing work better and cheaper, by costing less for fuel and repairs, by lasting longer and by maintaining far greater resale values.

Thousands of these superior tractors are working steadily and faithfully in the finest citrus groves. They are built especially for Southern California conditions. They are powerful, smooth and low—they are completely streamlined—they are thoroughly protected from dust and dirt. And the new model "Caterpillars" operate with wonderful efficiency on cheap, low grade fuel—delivering a superabundance of power at remarkably low cost.

Don't fail to see the 3 new Orchard "Caterpillars"

. . . Orchard "22"—Orchard "30"—Orchard Diesel RD4 . . . at Pomona Fair and at our stores in Pomona, Los Angeles, Santa Ana and Oxnard.

TRACTOR'S TRACTOR & EQUIPMENT CO. Orchard Tools

LOS ANGELES: 150 W. Jefferson St. POMONA: 733 East 2nd. St. SANTA ANA: 410 W. 5th St. OXNARD: 346 Oxnard Blvd.

Listen:

know the best line of sales talk does not make the best product. The Fugit Pipe Line Heater is the pipe

line system that has been tried out. When you buy the Fugit Heater you are buying something with a background. We are established in the business and in a position to back our heater up. No job too large for us—from oil storage to completed installation.

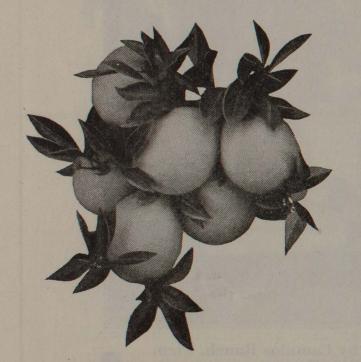
We are also handling all kinds of fuel oils. So you will be assured you are getting the right grade of fuel for our heaters.

Buy the Fugit Heater and be safe.

FUGIT SMOKELESS ORCHARD HEATER CO.

700 Date Street

Alhambra, Calif.



WHICH **FORM** ZINC?

The form of zinc best adapted to conditions in your grove can best be determined by your local advisors. But you'll naturally select "Meteor" * Brand, whether you buy the crude oxide, the refined oxide, or zinc sulphate because these materials have been prepared to meet specific California conditions.

"METEOR" ZINC **COMPOUNDS**

Refined Agricultural Zinc Oxide Guaranteed 771/2-79% Zinc Crude Zinc Oxide (Semi-refined)

> Zinc Sulphate Crystals Guaranteed 23% Zinc

Guaranteed 69-70% Zinc

Write for Free Special Pamphlet on use of "Meteor" Zincs Manufactured by THE CHEMICAL & PIGMENT COMPANY Oakland, California

DISTRIBUTED BY

WILSON & GEO. MEYER & CO. Federal Reserve Bank Bldg., San Francisco, Calif.

Timely Information on Insect Pest Situation in Southern California

September circular published by the bureau of pest control of the California Fruit Grow-

Fall Dusting for Thrips on Lemons in the Interior

growth and, where this is sparse, de-Only when a heavy flush of growth

control with sulfur dust but are wait- the sulfur application. ing 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 Santa Barbara County that should be own experience is that fruit exposed to high temperatures for such a long Experience the past few years has period as has been the case this sea- shown that the work can be started than in the spring or early summer. and carried on with satisfactory re-

growth and fruit-set during the next area should get under way at once. six weeks, and its protection from It is advantageous to complete as thrips damage, creates a situation in much fumigation as possible before

The accompanying excerpts are from the 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 HE citrus thrips at present is important. Watch the weather and causing severe damage in many dust preferably on a declining hot lemon groves in interior areas spell, using about 1/2 pound of sulfur from San Fernando to Corona. It is per tree. Follow within three or four attacking particularly the young weeks with a second dust, if possible.

Before dusting, it is advisable to forming or "rat-tailing" it as fast as formulate your pest control program the growth appears. Where blossoms for red scale. If fumigation only is are scattered it often attacks and to be used this fall, dusting offers no weakens the stems, causing drop. hazard before or after treatment. Dusting closely following fumigation appears is the effect reduced. Eurekas has been unusually effective against are more affected than Lisbons or thrips. If oil spray is to be used, it would be hazardous to apply the Many growers desire to attempt spray within four to six weeks after

> Fumigation For Red Scale in Santa Barbara County

There is a considerable area in fumigated for red scale this season. son, is much more resistant to burn in September with comparative safety The desirability of a flush of sults. Therefore fumigation in this



New Weather Knowledge To Be Told Lemon Men

October, Nineteen Thirty-six

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

confined to fumigated or untreated tioned.

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

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."

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 As-In spite of the protracted hot sum- sociation at Edison, Kern county. mer, red spider has continued with Plans and specifications were pre-"ups and downs" and is still more or pared by Herbert A. Hamm of Pasaless persistent in most districts. dena, who will also supervise the Where spider is to be found at this construction work for the owner. time of year, a few weeks of favor- The addition is 30x124 feet in size, able weather might easily result in a and it will be insulated throughout. heavy increase. The problem of treat- It will be used for coloring and storment in the immediate future will be ing the fruit, and will be air condi-

The Vital Elements are in this Natural Nitrate

Natural Chilean contains almost two score of major and minor elements such as boron, magnesium, manganese, iodine, calcium, potassium, etc.—each a vital element in growth and healthy development of plants.

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

Your trees get their needed nitrogen in quickly available form.

They get in addition, a naturally balanced feeding of minor elements, the vital impurities.

MERMAID



WASHING **POWDER**

A SUCCESSFUL WASHING COMPOUND WITH ANY KIND OF WATER!

Protect yourself against disappointment. Rely on uniform, balanced Mermaid Washing Powder-it works with any kind of water in cleansing citrus fruit.

If the water in your vicinity is unusually hard, Mermaid used in the right proportion is all the softener you need. Just send us a sample of the water and we will tell you how much soap to use to insure the best results without

> Packed in bulk for the particular needs of the citrus industry

LOS ANGELES SOAP COMPANY

617 East First Street Los Angeles, California Makers of White King Soap Products and Mermaid Washing Powder

TEWEST plant food knowledge gives high importance to Chilean's impurities. They are the Vital Elements such as copper, boron, manganese, magnesium, iodine, calcium and many others, now known to be vital to tree health and growth. And in Natural Chilean, because it is a natural nitrogen, these Vital Elements are present in Nature's own wise balance and blend.

The Vital Elements in Natural Chilean make it the dependable nitrogen fertilizer . . . the plant food which insures quality as well as quantity in yield.

When you order be sure you specify Natural Chilean Nitrate of Soda. That is the way to be sure you get the genuine natural product. Even weight bags and always in first class mechanical

Free—Our interesting and valuable book "Vital Impurities." Write for your copy.

CHILEAN NITRATE EDUCATIONAL BUREAU, Inc. 1151 South Broadway Los Angeles, Calif.

Natural Chilean NITRATE OF SODA

WITH VITAL ELEMENTS IN NATURE'S OWN BALANCE AND BLEND.

TO MARKET!

TO MARKET!

—with your label in good condition when pasted with

STEK-O

CLARK STEK-O CORPORATION Rochester, N.Y. Stek-O Hill

Distributed by

BLAKE, MOFFITT & TOWNE

SAN FRANCISCO - LOS ANGELES - PORTLAND - SEATTLE - TACOMA OAKLAND - SACRAMENTO - FRESNO - SAN DIEGO - SAN JOSE SANTA ROSA — PHOENIX — BOISE — SALEM — TUCSON — LONG BEACH MEDFORD — YAKIMA

SPOKANE PAPER & STATIONERY CO., SPOKANE, WASH.



You will never hear Pomona Pump owners say, "It's not the first cost, it's the upkeep." Pomona Pumps are engineered and built for a lifetime service. When installation and operating cost are amortized over their many years of trouble-free operation, cost per day becomes unbelievably low. You won't find this inexpensive daily overhead with cheap, poorly engineered pumps. Why? Because with the purchase of such a pump, maintenance expense begins. With a Pomona, the first cost is the last cost. But don't take our word for it or even that of a Pomona salesman. Ask any of the Pomona users in your neighborhood what pump they'd buy if they had to do it over again—then you will want to get in touch with the Pomona representative. Send today for your copy of a brand new bulletin featuring things you should know about hydraulic laboratory tests.

POMONA PUMP CO.

406 S. Main St. Los Angeles, Calif 206 E. Commercial St. Pomona, Calif.

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 Monte Vista Ass'n. Erecting normal and the percentage juice increases only slightly or in some instances decreases.

fruit on the tree.

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°.
- Ripening as indicated by ratio is due to the decrease in the acid of the fruit.
- 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.
- The percent juice increases rapidly and uniformly during the early fall until 90% of the maximum juice content is reached. After this approximately a sixweek period is required to attain the maximum juice content.
- Certain evidence would indicate

Association members—

bring your purchase

orders direct to us.

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.

1111

Air Conditioned Addition

The Monte Vista Citrus Associa-An analysis of the fruit of the same tion of Riverside will begin the imsize on an individual tree reveals con- mediate construction of a \$30,000 siderable variation in ratio and per- addition to its present citrus packing cent juice due to the position of the plant on the corner of Pachappa and Fourth streets in that city. The new A brief study of the specific grav- addition will be used primarily for ity of peeled fruit shows only slight the proper handling and storage of difference between early fall and mid- grapefruit. Winter grapefruit from winter samples. Samples tested in the Coachella and Imperial Valleys late September had a specific gravity and local grapefruit will be featured. of .983, compared to .979 in De- The new building, with full basement, will be equipped with a modern air-conditioning plant and will provide storage capacity for 50 carloads. 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 Total soluble solids increase equipment is necessary in order to render the grower a better service and obtain for him maximum results.

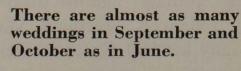
Other officers of the Monte Vista Citrus Association are: President, F. M. Reed; Vice President S. L. Herrick; Secretary R. A. Schirmer.

STEAM HEATING AIR CONDITIONING HUMIDIFYING SYSTEMS EARLE V. IKE CONTRACTING ENGINEER
2271 Panorama Terrace—Los Angeles
Phone OLympia 7296



Even in the Fall

a young man's fancy . . .



Prospective grooms will save money by choosing perfect diamonds and wedding rings from our exquisite collection. The family may buy gifts-silverware, clocks, watches, and jewelry—at discount prices.

WM. E. PHILLIPS CO. 7th Floor Metropolitan Bldg. 315 W. Fifth Street LOS ANGELES MU 1218

Choose Vegetables for Quality

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 wasty 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

ing a leaf will show toughness or ten- called cos lettuce, is young, compact, derness. If unbleached, the leaves not overgrown, coarse or spread. W HAT constitutes quality in artichokes? This and other the center leaves of chicory should be creamy white, or for the chicory the advantage of being obtainable when head lettuce is not so good. sold as Witloof chicory or French or when head lettuce is not so good. Belgian endive, the whole head of the unblanched chicory.

are undesirable. Breaking or twist- Good quality of romaine, also

Zuccini, another favorite among should be creamy white and will newer vegetables, is preferable when form an almost solid, elongated head, of intermediate size. The smaller as contrasted to the more open head sizes of this squash are inclined to be watery, the larger ones seedy.

Menus For Hallowe'en Events

MOSTS! goblins! black Tcats 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 occa-

that vanishes.



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

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

Orange Prune Salad Sandwiches of Boston Brown Bread

Individual Pumpkin Pies Coffee

Orange Prune Salad: On peds of shredded lettuce arranged on individual salad plates, place circles of 5 large orange slices. Top each orange slice with a cooked prune stuffed with peanut outter, moistened with orange juice. Serve with French

This Hallowe'en Snack furnishes an Orange Frosted Doughnut, a glass of Hot Fruit Punch, and a ghost Sandwiches of Boston Brown Bread: Cut bread in thin rounds and butter lightly.

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

CAD news has come to us. One S 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

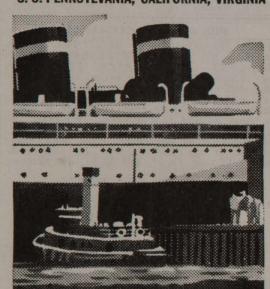
SEE COLORFUL

MEXICO – PANAMA HAVANA

Sailing to New York this Fall with

PANAMA PACIFIC

S. S. PENNSYLVANIA, CALIFORNIA, VIRGINIA



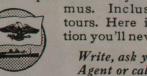
Largest ships, Fastest schedules Coast to Coast...sailing from Los

Angeles every second weekend Make your reservation now to sail on a giant Panama Pacific luxury liner (famous for hospitality, cuisine, comfort—and smooth sailings!)

RATES-First class to New York from \$190-(\$225 at certain seasons). Tourist Cabin from \$125. Reduction on round trip by steamer - 25% "off" season, 10% in season. "Circle Tours" by rail or water, starting from your own home town; go either way by steamer. Also steamer-plane tours.

MEXICO TOURS - (round trip water and rail). Two and three weeks of sightseeing in Mexico at low, allexpense rates. Visit Acapulco; Taxco, Cuernavaca, Mexico City, other historic and thrilling places.

PANAMA VACATIONS - Three-week round trips with 41/2 days at the Isth-



mus. Inclusive cost tours. Here is a vacation you'll never forget! Write, ask your Travel Agent or call—

Panama Pacific Line

TRinity 8261 715 W. Seventh St., Los Angeles

Classified Columns of the California Citrograph Rates: Forty cents a line, cash with order. Minimum 80 cents.

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

MISCELLANEOUS

PIPE, slightly used, like new, 1" 5½c ft.; 1¼" 6½c; 1½" 7½c; 2" 8c and 10c and larger sizes, 4" O. D. 12c. Also irrigation pipe.

IMPERIAL PIPE & SUPPLY CO.

ROLLS DEVELOPED - Two beautiful double

anteed never fade, perfect tone prints. 25c coin.

Rays Photo Service, La Crosse, Wis.

To Control Winter-Summer

weight professional enlargements and 8 guar-

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 ave-

area, with an elevator and stair vesti-

bule 24'x271/2', 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, refrig-

erating and air conditioning equip-

as it will be equipped to maintain a

fixed temperature against winter tem-

peratures 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

let to the Gay Engineering Co. of

Los Angeles. The excavating con-

tract was awarded to the Ted Ducey

The plans and specifications were

prepared by Engineer Herbert A.

Hamm of Pasadena, who will also supervise the construction and in-

stallation of all of the mechanical

equipment. The total cost of the

Frank G. Webber is general man-

work is estimated to be \$45,000.

ager for the association.

SPEEDY HANDLING OF PERISHABLE FRUITS

AT LOWEST COST

Excavating Co. of Pasadena.

This plant will be unique inasmuch

The building is 72x100 feet in

nue, Pasadena.

this condition.

Los Angeles, Cal.

NURSERY STOCK AND SEED

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.

TETLEY NURSERIES Riverside, Calif. 4344 Market Street

CITRUS TREES

QUALITY stock in leading varieties. Grown from very carefully selected buds on carefully selected root-stock. Fruit Growers Supply Company citrus buds used. We invite your inspection of the nursery. Address Cascade Ranch, San Fernando, California, or phone John T. Culbertson, San Fernando 4874.

CITRUS TREES—All leading varieties. First class stock at reasonable prices. Selected performance record buds grown on sweet, sour, grapefruit or rough lemon rootstock. We deliver and plant if desired. Nurseries in San Diego, Orange, Ventura and San Bernardino counties.

FRED W. MAY NURSERIES

313 Bush Street, Santa Ana, Calif. 4871 Res. Phone 3635-J DEPENDABLE CITRUS TREES

Blackman Nurseries 4877 Bandini Ave. Riverside, Calif. KNIGHT AVOCADO NURSERIES, Fullerton. West on Malvern, North on Wood.

FERTILIZERS

SOILTONE, Gypsum, Sulphur, Lime
"Robinson's Mineral Fertilizer"
"ROBIN BRAND" Complete Fertilizers
Send for Free Circulars Robinson Fertilizer Co., Phone 18

PUMPS PUMPS FOR EVERY PURPOSE from "The

A complete pump service. New and rebuilt Turbines.
ALLSTEEL PUMP CO. 1755 E. Slauson Ave.

FOR SALE OR EXCHANGE

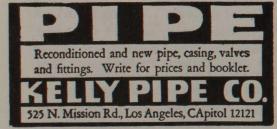
LEMON PLANTINGS IN BEAUTIFUL HOPE RANCH AT SANTA BARBARA: HAVE ABUNDANT CHEAP WATER, FINE SOIL ABUNDANT CHEAP WATER, FINE SOIL and frostless climate; low prices and remarkably desirable surroundings; they have home sites with views of the mountains, sea, and islands. These orchard tracts (of sizes to suit) are most inviting to purchasers. Privileges of the picnic grounds and private bathing beach, and many other advantages come with your purchase at the Ranch. Send for illustrated booklet, "Lemon Facts" and Map with pictures of Hope Ranch, 2000 acres.

H. G. CHASE REAL ESTATE
Sales Managers of Hope Ranch

Sales Managers of Hope Ranch te St. Santa Barbara, Calif. Courtesies to Brokers 1012 State St.

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 uice. \$20,000 cash. Palm Hut, Rt. 1, Box 700,



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

> * * * A Book to Read

would have done it.

HIS page carries few book re-I views 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 mys- 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.

1111 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

See . . . Compare . . . Buy . . . THE NEW CONTROLLED IGNITION Allis-Chalmers Oil Tractor The refrigerating contract has been

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 de-

sign—so simple anyone can service it. Specially designed injection system that assures a controlled airfuel 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. FACTORY BRANCH-OAKLAND, CALIFORNIA

ALLIS-CHALMERS MFG. CO. Dept. 23, Tractor Division, Milwaukee, Wis. Gentlemen: Please send FREE catalog on ☐ 49 H.P. Model "K·O"; ☐ 79 H.P. Model "L·O"; ☐ 27+ H.P. Model "M" I farm ____acres.

R.F.D. State

TRACTOR DIVISION-MILWAUKEE, U. S. A.

CALIFORNIA CITROGRAPH

INDEX TO VOLUME 21— Nov., 1935, to Oct., 1936, Inclusive

Foliage, Relation of, to Fruit Size

Freight Rate Florida Citrus, Low....146

Some Lessons Learned in Two

Freezes _______23
Frozen Valencia Oranges, Granulated and—E. T. Bartholomew,
W. B. Sinclair, F. D. Young....458
Fruit Flies Draw Cross-Fire of

ment Program Citrus.....

Gast, Ross H.-How Pick Oranges

by Ventura

Abel, Edson — Handling Lemon
Deal Under Calif. Prorate Act...390
Acidulated Fertilizers for Alkaline
Soils—W. T. McGeorge.........368 KEY TO INDEX, VOLUME 21 Advertising Strategy, Pre-Testing Ideas Formulating Sunkist—W.

Anniversary 334
Pruning Citrus Discussed 211
Pruning for Inside Fruits Explained 160
Soil Tillage and Other Topics

So. African Horticulturist Ad-

and Production ______2
Colorful Pageant Depicts "Romance

Oranges Higher, Lemons Lower—F. O. Wallschlaeger.... 2

Canning: Problems of the Citrus panies Mean Citrus Growers.....196 Chaffey Junior Fair, Citrus Ex-Nixon _______118
An Inherent Unstable Strain Valencia Orange—A. D. Shamel, C.

Exceed \$100,000,000128

October, Nineteen Thirty-six

Associated Farmers of California
Formed for Mutual Protection— C. E. Hawley _______298
A Texas Dairy Cow Begs for Oranges—A. D. Shamel ____220
Automatic Regulator for Orchard Heater Devised _____301
Avery, F. W., Retires _____58

Granulated and Frozen Valencia

Bring Pest Control Winter Mortality of-R. H.

Bud Selection:
An Inherent Unstable Strain of

Survieh By-Products: See Products. C

Cady, H. B., Leaves Alta Loma for Honolulu303 Canned Orange Juice, Manufacture and Use Discussed—H. J. Stover ______3
Citrus League: Yields Influence

10 Years—H. E. Wahlberg....340 Lemons Orange County—10 Year Summary—H. E. Wahlberg....444 Yields Influence Production Costs;

Income Tax—Knox Far-

rand ________11
ameron, S. H., R. W. Hodgson,
E. R. Eggers—Rootstocks for
Bearss Lime in Calif.—Progress

Felicitations 71
Permanency and Stability Sunkist Evidenced in New Bldg.—B. A. Woodford..... 70
Sunkist Building—Milestone in Progress 66

Damerel, H.—Progress Farm Bureau Shown Annual Convention Chicago _______1

Daybell, Frank—Are Packing Houses Being Run As Efficiently as Should Be?.....

Citrus Grove

Dungan, J. S., Exeter Grower, Started as Day Laborer—D. J.

W. Nixon

Effort Find Industrial Uses NonMerchantable Citrus Fruits—W.

E. Baier 22
Eggers, E. R., S. H. Cameron, R.
W. Hodgson—Rootstocks for
Bearss Lime in Calif.—Progress

Patterson _______2
The Growers Real Annual Report—R. Hamlin ______1
Theory on Granulation — R. S. Wood ______4

arrand:
George E.—Relates Experiences
Serving Industry 23 Years.....278
Knox—California's New Income from California 234
Cooperative Way of Marketing,
Sound Principles—F. W. Peck... 19

Available

Disease-Free Citrus Trees Aim of Effects Storage and Holding Conditions Alternaria Lemons...118 Viewpoint of Plant Pathologist on How Improve Quality459

Cargo Fertilizing Material at

Spreading Manures from Sleds Saves Time and Money—D. J. Thompson ______2

Soil 316 Sales Set Record 4

Financing Growers and Coopera-tives Explained Finland and Citrus There, Calif.

S. Woglum41
III. Viewpoint Plant Pathologist How Supply Co. Operates Benefit
Grower Explained—A. E. Barnes. 206
Hubbard, C. E., re Interesting
Work on Lemons Being Done
Fleischmann Ranch
Hunt B. W. Art Spraying Cityus

Fleischmann Ranch 151 Hunt, R. W.—Art Spraying Citrus Trees 375 mpressions Gained Touring San Joaquin Citrus Area — D. J.

Fruit Flies Draw Cross-Fire of Scientists, Hawaii's 48
Fruit Growers and Farmers Convention, Program 59
Fruit Growers Supply Co., How Operates for Benefit Growers Explained—A. E. Barnes—206
Function District Exchange—H. B. Harlow 72
Function Division Manager's Office—J. O. Cook, Sr. 73
Fundamental Basis Soil Management Program Citrus—172 igation: Fundamental Basis Soil Manage-Fundamental Basis 300 ment Program 17
Of Lemons for Optimum Vigor
Without Reduced Production—
T. A. Lombard Insect Pest Control: Art Spraying Citrus Trees-R.W.

Insects _______257
Finds Orange Infested With
Mexican Fruit Fly Larvae...... 20
Fumigator's Convention Hears
and Discusses Industry Park Fumigator's Convention Hears and Discusses Industry Prob-

Red Scale Treatment 101
Orchards 184
Report on Certain Dusts Tested
Against Citrus Thrips on Oranges—E. A. McGregor 436
Scale Conditions So. Calif. Oranges—364 Granulation:
Oranges—L. D. Batchelor......416 Study Parasites May Bring Con-

Institute, Citrus:

Improve Quality Citrus-R. S.

Discusses Current Problems Citrus
Industry 1
Program for 1
To be Held Fillmore 3

Interesting Program Arranged Fruit Growers—Farmers Convention 59

Interesting Work on Lemons Done Fleischmann Ranch ______151

In This Issue You Will Find THAT

Woglum _____4 Winter Mortality Black Scale in

ments _____223
Growth and Water Losses in Citrus
as Affected by Soil Temperatures
—A. R. C. Haas._____467

Hall, Howard W.—Products Phase Lemon Industry and Relation to Hankey, C. H., Visits Citrus Mar-

Santa Ana401

Costly Fruit Flies Draw Cross Fire Scientists 48
How Pick Orange in—Ross Gast..238
Orange Growing in Paradise of
Pacific—H. H. Warner238

Johns, C. C., Colorful Pageant Depicts "Romance Citrus" Corona Celebration 282

Johnston, J. C.—Suggestions Mottle
Leaf Control Tulare Co. 159

Knox, R. L., Very Hopeful Outlook

Get the facts on the Standard Free Roller Slat Conveyor. Brings a continuous line of filled crates to the lidding machine without crowding—yet delivers them within easy reach of the operator. There's a Standard Sales Engineer near you. Call him in-without obligation on your part-for a plant survey and a conveyor estimate.

STANDARI CONVEYOR COMPANY

North St. Paul. Minnesota PACIFIC FACTORY BRANCH San Francisco, Calif. PACIFIC SALES OFFICES Portland, Ore. Los Angeles, Calif. Seattle, Wash.

Oxnard Citrus Ass'n. Now Operating 219
Scott & Borden Build Addition,

Everything from Grower Not

ciples Cooperative Way Market-

Agency
Peck, Frank W.—Soundness Prin-

....270

Precooling Plant 110
Packing Houses Run as Efficiently
as Should Be? Are—Frank Day-

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

Labor:	N.: 10 CI
Associated Farmers Calif. Formed	National Orange Show:
for Mutual Protection C F	Expected Attract Thousands Vis-
for Mutual Protection—C. E. Hawley	itors163
Difficulty With Dishard O	San Bernardino, Once Again
Dimculty With Pickers Orange	itors
County Still on407	South Sea Motif This Year126
Laidlaw, G. G Keeping Citrus	New Citrus Varieties for Trial—H.
Bearing With Special Reference	B Frost 16
Pruning211*	B. Frost 16 New Light on Alkali Soils—W. T.
Le Verne:	McCoorgo I E Prograde 246
Associations Had Good Year109	McGeorge, J. F. Breazeale246
Orange Association Installs New	New Pooling Plan for Associations
Packing Machinery	to Eliminate Many Inequities 37
Leffingwell Ranch Operations De-	New Zealand:
combod Anther Operations De-	Citrus Conditions in 49
scribed401	Citrus Growing in — L. A. L.
Lemon:	Moore406
Business in Calif., and Trends	Nichols, E. S.:
of Times, Evolution — C. C.	Regarding Minimum Tempera-
Teague117	tures Rio Grande Valley, Texas 56
Men's Club:	
Cooperative Pest Control Benefits	Nixon, H. W.:
Told472	Larger Crops of Lemons Are in
Evolution Lemon Business in	Prospect for California398
Calif. and Trends of Times	Klotz, L. J., H. S. Fawcett-Ef-
Calli, and frends of filles	fects Storage and Holding Con-
—C. C. Teague117	ditions on Alternaria Lemons118
Field Day U. C. L. A280	
Financing Growers and Coop-	0
eratives Explained 47	Obituary:
Fundamental Basis Soil Man-	Blake, H. L261
agement Program Citrus172	Curtis, E. A. 221 Dorman, D. M. 261
Hear About Products Business	Dorman, D. M. 261
and African Agriculture 15	Elkins, C. C
Hear of Opportunities for Ex-	Evans A D
port Europe and England 82	Evans, A. R
How Supply Co Operates for	Uladia II II
How Supply Co. Operates for	Hardie, H. H
Benefit Growers Explained— A, E. Barnes206	Lyon, E. M
A, E. Barnes200	Mack, R. H. 232
Observes Citrus Work at U. C. L. A. Campus	Reichard, Daniel 24
L. A. Campus330	Ross, William
Pre-Testing Ideas in Formu- lating Sunkist Advertising	Waynick, D. D. 352
lating Sunkist Advertising	Webster, Hobart362
Strategy-W. B. Geissinger281	Wisdom, G. W 108
Problems, Lemon Industry Un-	Wisdom, G. W
der Investigation Experiment	can Hunt Trin
Station—I. D. Batchelor 322	One of Foundary Evaluates Sanda
Station—L. D. Batchelor322 Products Phase Lemon Indus-	One of Founders Exchange Sends
try and Relation Grower—	Felicitations—P. J. Dreher
H. W. Hall 3	Operating industrial Democracy to
	Get Maximum Return Grower-
Traffic Problems and Lemon	P. S. Armstrong
Retrigeration Discussed262	Orange Growing:
Prorate Act:	Around the World - B. F.
Handling Lemon Deal Under—	Thorpe378
Edson Abel390	Thorpe
Upheld as Constitutional by	Warner238
Supreme Court 194	Industry Expanding in French
Le Roy, V. V., Reports of Claremont Pomological Club Meetings —61, 112, 132, 160, 211, 266, 312	Morocco 404
mont Pomological Club Meetings	Orchard Heating: See Frost Pro-
-61, 112, 132, 160, 211, 266, 312	tection
334	tection And
Lime in Calif Progress Report,	Oxnard Citrus Ass'n.:
Poststocks for Posts Report,	Members Honor Late Manager,
Rootstocks for Bearss — R. W.	William Ross10/
Hodgson, E. R. Eggers, S. H.	Now Operating New Lemon
Cameron280	Unit219
Loans, Grove Owners May Improve	P
Groves and Homes Under FHA	
—F. W. Marlow403	Packing House:
-F. W. Marlow403 Lombard, T. A.—Irrigation Lemons	Charter Oak Ass'n, Changes
for Optimum Vigor Without Re-	Setup; To Build Precooler350
duced Production366	Culbertson Lemon Ass'n. Builds292
Los Angeles County Fair:	Exeter Citrus Ass'n. House Re-
Pageant Early Days at-R. L.	places Plant Destroyed Fire 79
Driscoll430	Goleta Lemon House Moves First
Spectacular Showing Citrus at 6	Fruit Record Time426
	Rancho Respe Constructing482
Lyon, E. M., Obituary 24	Canta Davis Orange Assa Con
N.	Santa Paula Orange Assn. Con-

Spectacular Showing Citrus at..... 6 Lyon, E. M., Obituary 24 Machinery Prices, Quotes Federal Statistics 443 Mack, R. H., Obituary 232

Mackie, D. B.: Citrus White Fly and White Snail

Manures:
in the Soil, Produces Artificial....316
Spreading from Sleds Saves Time
and Money—D. J. Thompson..235
Marcy Ranch Affiliates With Ana-

Phosphate Studies on Calif. Soils in Hawaii—Rost Gast _____2
Pioneer Planting at Pomona Continues Produce Well (Frank L.

Prorate Act. Calif. Upheld as

Holds Picnic Meeting Citrus Exeriment Station - V. V. Le-

Citrus Fruits - F. F. Heyden-Plan for Ass'ns. to Eliminate In-

line Soils _______36
and J. F. Breazeale—New Light
on Alkali Soils ______24
McGregor, E. A., Report on Certain Dusts Tested Against Citrus Powell, H. Clark—Work in South
Africa Sponsored
Powell, T. H.—How Sales Department Operates Get Best Possible
Price Fruit Mexican Fruit Fly Larvae, Finds Power, Geo. C.—Honored on 84th Birthday
Precooling Plant Sierra Madre—

W. B. Geissinger 28
Prior, Basil, Lindsay Grower Tells
Changes Orange Business Past 40 Prizer, J. A.—Problems of Citrus Growers Problems of Lemon Industry Under

Citrus Income 1935-36 Expected Exceed \$100,000,000128 and Returns Valencia Oranges, 10 Years

CGeorge, J. F. Breazeale..........246
Pooling Plan for Associations
Eliminate Many Inequities 37 Lemons Orange County — 10
Year Summary — 44
Yields Influence; Oranges
Higher, Lemons Lower — F. O. Wallschlaeger 2
Larger Crops Lemons Prospect
Calif.—H. W. Nixon 398
Probably Greatly Increase Next
Decade, World Orange 423 egarding Minimum Tempera-tures Rio Grande Valley, Texas 56

Business and African Agricul-

Merchantable Citrus Fruits -

Phase of Lemon Industry and
Relation Grower—H. W. Hall. 3
Problems of Citrus Growers—
J. A. Prizer 34
What Products Companies Mean Citrus Growers—E. T. Cassel..196 Progress Farm Bureau Shown Annual Convention, Chicago — H.

Damerel 130
Prorate Act, Handling Lemon Deal
Under Calif.—Edson Abel 390
Prorate Act Calif. Upheld as Con-

Citrus Again Discussed, Clare-mont Club—V. V. LeRoy......211 Citrus Tree Form and Produc-

Pyrethrum Extract Tested on Red Scale—R. H. Smith.287

Quality of Fruits We Grow and Ship, How to Improve—A Symposium: I—Commercial Quality Defined—

Insect Pest and Disease Intercep-tions Recorded

Raby, E. C., E. T. Bartholomew, W. B. Sinclair—Granulation Val-

Rancho Sespe: Constructing Packing House.......482

Red Mite (Spider) Problem So. Calif.—A. M. Boyce418

—H. D. Chapman, I, 116; II, 152 Pyrethrum Extract Tested on-R. H. Smith ______287
Treatment Lemon Orchards ____184 (See also Insect Pest Control) Reed, H. S., Transfers to U. C.

> iscussed, Traffic Problems and C. S. Pomeroy.

Texas Centennial Riverside Grower (H. E. Waite) With Keen Interest Early Records

Ross, Wm., Oxnard Citrus Ass'n.
Members Honor
Rumsey, C. E., re Esthetic Side

Sales Tax Repeal Means Resurrection Single Tax—R. H. Taylor....271

Santiago Ass'n. Shipped 1765 Cars

Oranges Savage, L. D.—Lemon Men Hear Opportunities Export Europe and England

(See also Insect Pest Control) Conditions So. Calif. Citrus Orchards 364
Problem, Black 385
Pyrethrum Extract Tested on Red—R. H. Smith 287
Scaly Bark: Disease-Free Citrus Trees Aim Experiment Station—

Tells Visit to Finland and Citrus

Texas Dairy Cow Eats Oranges...220
Esthetic Side Orange Growing
Southwest, Art. 12 — C. E. Rumsey and C. S. Pomeroy:

An Inherent Unstable Strain

Precooling Plant New Storage Plant 23 Sinclair, W. B., E. C. Raby, E. T. Bartholomew — Granulation

Valencia Oranges 5
Sinclair, W. B., F. D. Young, E. T.
Bartholomew — Granulated and
Frozen Valencia Oranges 458
Size Eureka Lemon, Relation Foliage Fruit—A. D. Shamel, C. S. Pomeroy Smith, Ralph H.: Pyrethrum Extract Tested on Red

Citrus Trees, Art—R. W. Hunt..375
(See also Insect Pest Control)
Spreading Manures From Sleds
Saves Both Time and Money—D. Stokdyk, E. A.—Marketing Calif.'s Fruits Cooperatively — I, 150; II, 250.

Storage and Holding Conditions on Alternaria Lemons, Effects— H. S. Fawcett, L. J. Klotz, H. W.

Nixon 11

Stover, H. J. — Calif. Canned Orange Juice, Manufacture and Use Discussed 31

Stow Orchards, Santa Barbara Co.

Advertising Strategy, Pre-Testing Ideas in Formulating-W. B. leissinger281

A Milestone in Progress.......... Architectural and Structural Wise and Sound Investment—

Farrand .. emperatures, Growth and Water Losses Citrus as Affected by Soil -A. R. C. Haas......467

rection Single Tax — R. H. Taylor, Ralph H .:

Teague, Milton; Honored by Auto

Texas Tour Party 52

pressions Gained Touring San Joaquin Valley's Citrus Area....321
J. S. Dungan, Exeter Grewer,
Started as Day Laborer........369
Spreading Manures from Sleds
Saves Time and Money235

Tour Party, Florida-Texas:

Entertained by Harrisons401
Entertained by Henry Terry....... 52
Tolley, H. R., Named Administra-eration Discussed ______262
Turning Searchlight on Citrus Industry—C. E. Hawley ____123

U. C. L. A. Campus, Lemon Men's Club Observes Citrus Work Car-E. R. de Ong.....

Varieties: for Trial, New Citrus — H. B. of Citrus, Growers Reporting

Wahlberg, H. E.:
Cost Producing Lemons Orange
County—10-Year Summary444
Ten Years Production Costs and Returns Valencia Oranges340
Protecting Orchard Against

Waite, H. E. re Riverside Grower

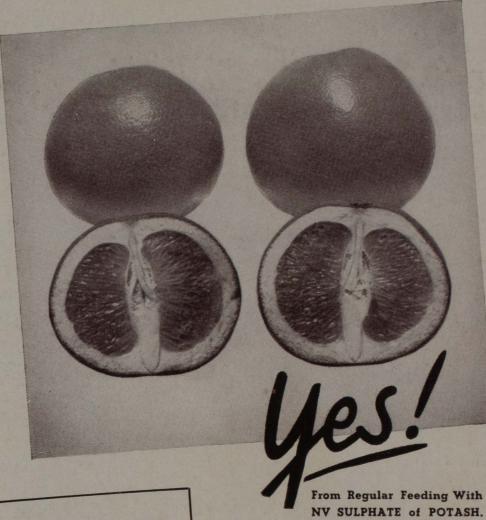
Wind—Orchard Enemy No. 1......296

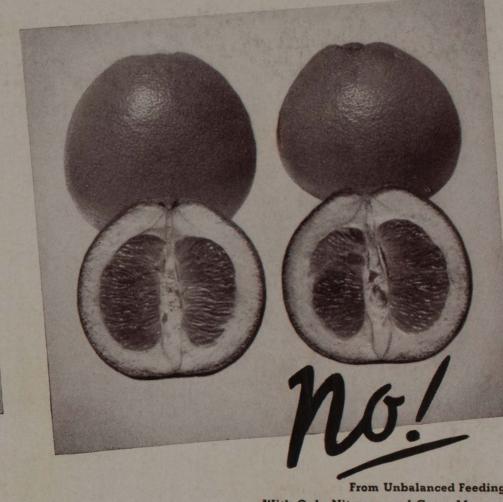
New Sunkist Bldg. — C. C.

Woods, R. S. Theory on Granula-WPA Furnished Assistance White Eradication Compaign — D. ably Greatly Increase Next De-Yields Influence Production Costs;

Frozen Valencia Oranges......458 Copper Bordo for Fumigated Groves—R. S. Woglum 22
Sulfate: Suggestions Mottle Leaf
Control, Tulare County—J. C.
Johnston 159

De these fruits have Inside Quality?





From Unbalanced Feeding With Only Nitrogen and Green Manure.

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.

He has high-quality mixtures on sale balanced to meet the needs of your particular grove. Potash is the final figure in the fertilizer analysis. Select the mixture that contains plenty of NV Sulphate of Potash, the quality builder in citrus fertilizer.

Citrus fruits, properly fed, remove from the soil more potash than both nitrogen and phosphoric acid combined. Nitrogen produces volume, phosphoric acid matures the fruit and helps regular bearing, but NV Sulphate of Potash is the most important quality element because it supports and fills out the effects of nitrogen.

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 fruit that builds markets and brings top prices is the fruit that has that extra quality under the peel-better taste, finer texture and plenty of rich, full-flavored juice.

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,

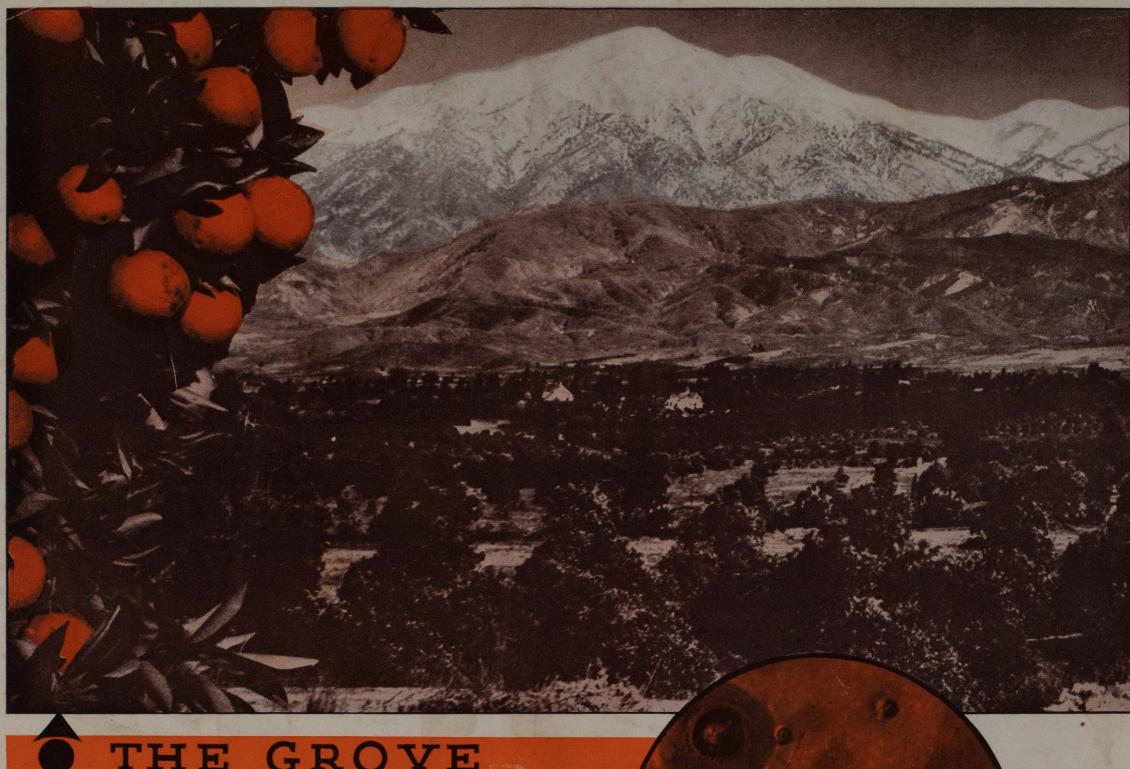
tough rinds and the superior inner texture. If you could eat these fruits you would taste an even greater quality difference than the photographs indicate. The potash-fed fruits are heavy with juice rich in solids and sugars.

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. NV SUL-PHATE of POTASH would have made these fruits just as good as those at left.

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**



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—

IT LEAVES NO INJURIOUS RESIDUE



ERICAN 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.