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PICKING, PACKING, AND MARKETING
THE APPLE

—BY—

LOWELL B. JUDSON

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BULLETINS

The regular bulletins of the Station are sent free to all citizens of Idaho who request them. Late bulletins are:

52. Potato Scab.

53. Experiments With Wheat and Oats for Smut.

The reserve stock of all bulletins except the two mentioned above was recently destroyed by fire. Some are to be reprinted, notice of which will be published later.

Picking, Packing and Marketing the Apple.

—BY—

LOWELL B. JUDSON.

TIME OF PICKING.

The time of picking red apples is commonly gauged by their color, and that of yellow apples by the color of the seeds. The latter is the only reliable test of ripeness, for an apple picked just as the seeds have turned a light brown, and before they become dark around the edges, will be found to have not only full flavor, but the best keeping quality. But red apples are often left for some time after the seeds indicate maturity to allow them to put on more color, which they do rapidly under the influence of the bright days and frosty nights of autumn; and indeed this is the only way of obtaining color on fruit in the shady portions of the tree. Growers should bear in mind, however, that to defer picking after the seeds indicate ripeness, invites watercore and shortens the life of the fruit in storage, often to a serious extent with the mid-winter varieties. Much of the complaint recently lodged against the Jonathan because of rotting at the core is doubtless attributable to late picking. Unless this trouble is corrected the sale of this valuable variety is sure to be hurt. The purchaser is completely deceived by the perfect appearance of the fruit, not a sign of decay being visible until it is cut open, when the flesh for some distance about the core is discovered to be brown, radiating in narrow rays toward the skin, which, however, it seldom reaches. It is worse than a worm hole, for that can be cut out. A box containing even a few of this sort of apples makes the

consumer distrustful of the variety, while half or more sickens even the most enthusiastic friend of "Brother Jonathan."

To get an idea of the effect of early and late picking upon this trouble, I requested Mr. C. C. Eiffe of Payette, in the fall of 1904, to pick a box a week for several weeks, beginning as soon as the seeds turned, and keep notes on the appearance of the core rot in storage. This he kindly consented to do, though he did not find it convenient to carry out the experiment with the detail I intended. His results, however, are confirmed by the experience of several growers in that valley, and are not open to serious question. One box was picked September 11th, a second a week later, and a third one morning in October after a heavy frost. In January the September boxes were found to be keeping equally well, the ratio of sound apples to decayed being six to one; whereas the October box showed a precisely inverse ratio—six rotten to one sound. In May, long after the late-gathered apples were gone, a considerable number of the early-gathered still remained juicy and in good condition. There is probably no other winter apple for which prompt picking is so important as the Jonathan.

DEVICES FOR PICKING.

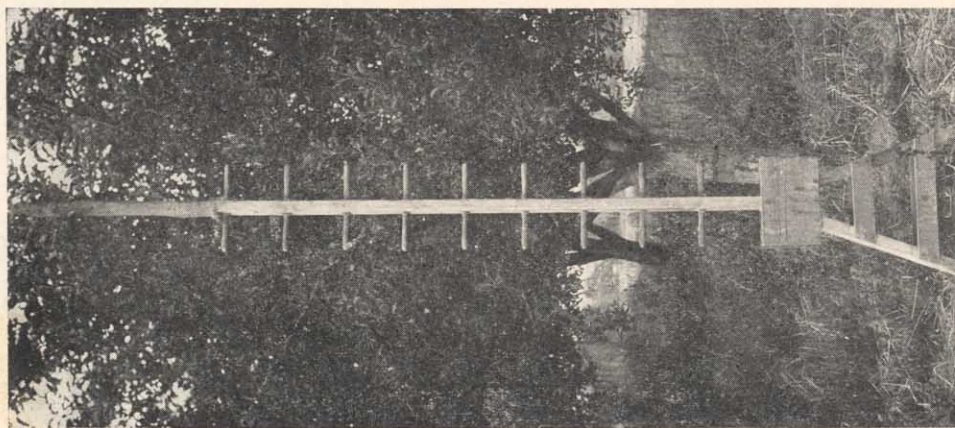
Ladders It costs money to step on a ladder, as the orchard owner soon finds, and all that can reasonably be done by pruning to start the head of the tree low and keep it low, is a paying investment. It should be possible for several years to gather a large percentage of the crop from the ground, or with a very low ladder. Nevertheless you can scarcely make a dwarf tree by any amount of pruning, and in every apple orchard ladders of some kind soon become a necessity. Climbing about among the branches of a tree is always to be deprecated. Mr. E. H. Shepard, of Hood River, tells me that he once counted forty-three fruit spurs on the ground under one tree in which pickers had been climbing. Of all the numerous styles of ladders, some form of step ladder is best adapted to the orchard, whether the welfare of the tree is considered, or the comfort of the picker.



Fig. 2. Japanese ladder: for trees too tall for step-ladder.



Fig. 1. Japanese step ladder: outside family on uneven ground.



Any ladder which must be set against the tree is a constant menace to it. Perhaps the best type of tall step ladders is the one shown in Fig. 1, as it is substantially built, yet light enough to be handled easily by one man; and having only three legs, it is easy to set up securely on uneven ground. The wide spread of legs at the bottom of the steps makes it especially stable. Where a ladder only about half the height of this is required, a strong, heavy, four-legged ladder, such as appears in the background of Fig. 4, is a general favorite. It is about four feet wide and non-folding, being more like a small flight of stairs than a ladder. It is the safest and most comfortable of ladders, but heavy and awkward to move. For work in tall trees the Japanese ladder, Fig. 2, is very useful. It is lighter than a trestle ladder, as well as easier to manipulate among the branches, because of its pointed shape. Lightest of all the taller ladders is the single rail ladder, (Fig. 3) but as it is also least safe and comfortable for the user, it is not likely to become widely popular.

Receptacles In the matter of picking receptacles the greatest diversity prevails. Buckets, baskets, and bags have each their devotees, and one man tells me he provides his pickers with coal scuttles. The latter, however, suggest pouring a little too strongly, and such rough treatment is not to be thought of, any more than with eggs. Buckets are more commonly used than baskets, largely perhaps because they are easier to obtain, but both are awkward to handle compared with bags. A lining of burlap greatly improves them, though it should not cause any relaxation of care in placing the fruit in them. Bags are open to the objection that the fruit in them is easily bruised if the bag brushes against a limb or ladder. In many styles of bags it is unhandy to remove the fruit without pouring, and to overcome this difficulty the bottomless bag, (Fig. 6) has been devised, which allows the fruit to roll from the bottom when the chain is released. Such treatment might do with oranges, but with apples—never. The average picker could never withstand the temptation to stand up and let them shoot into the

box the moment the foreman's back was turned. The best picking bag that has come to my notice—and I consider it superior to all baskets or buckets—is the apron bag shown in Fig. 4. It is cheap, being easily made of a heavy grain sack; hangs in the most convenient position for filling, leaving both hands free; is so shallow that the first apples can be conveniently laid in it without dropping, and yet holds all the wearer can readily carry; and finally, can not be emptied by pouring unless the picker stands on his head. Give him the suggestion, as a hypnotist would do, that he is not handling apples, but eggs, and this bag will help him live up to the suggestion. Mr. Fremont Wood of Boise has used it in his orchard with complete satisfaction, and has not observed any bruising of fruit from the rubbing of the bags against limbs or ladders.

For hauling to the packing house the fruit is usually emptied into apple boxes, and the ease of handling these can be greatly increased by having a slot for the hand cut in each end. Any box factory will slot them for a trifling sum. The slots also serve to mark off these boxes sharply from the rest, and prevent fruit being packed in them, more or less soiled as they are. Some growers have boxes especially made for this purpose, one-third larger than the common size and of heavier material, with ends higher than the sides to permit stacking without danger of bruising the fruit. These boxes should be hauled to the packing house on a spring wagon; or, if the distance is not great, a stone-boat is admirably suited to the purpose.

BOXES.

The best available material for boxes is spruce, being whiter and neater in appearance than fir, and so soft that it does not easily split when nailed. Fir ends split easily, and at times cause considerable annoyance and loss by breaking in part while the fruit is being handled. Some dealers assert that it will not split if made up while green, but those who have tried it find that it splits badly in seasoning. Single boards for tops and bottoms are somewhat neater than two, but harder to

obtain. The proper thickness of box material is as follows: ends, three-quarters of an inch; sides, three-eighths; and top and bottom, one-quarter. Thinner ends are apt to split; thinner sides to bulge, resulting in bruising in transportation; and thicker tops not to bulge enough, hence crushing the fruit when sprung into place.

Uniformity in the size of apple boxes is unfortunately lacking, though two sizes, known as the "standard" and "special", have found general acceptance in the Pacific Northwest. The inside dimensions of the "standard" in inches are $10\frac{1}{2} \times 11\frac{1}{2} \times 18$, and this is used far more than the "special", which is longer and a trifle narrower, measuring inside $10 \times 11 \times 20$. Some growers use the "special" for 128's only, its greater length permitting it to accommodate eight tiers nicely.* The "standard" box contains 2173.5 cubic inches, or slightly more than a struck bushel, and the "special" 2200 cubic inches. The bulge in the top and bottom adds about 150 cubic inches to the capacity of each. The standardizing of apple boxes is a piece of legislation much to be desired, and one that would be welcomed by every honest and progressive grower. There is nothing now but sentiment to prevent competition slyly cutting down the size of the boxes, and no legal redress for honest packers if their neighbors resort to these practices, and thus undermine the reputation the former are striving to build up. And are not the interests of the poor consumer also worth considering? The following incident is a case in point. A certain grower in an important apple center, having failed properly to thin, found he would have a large number of Yellow Newtowns a little below the four-tier size, which is the smallest of this variety commission men care to handle. Perhaps this man would have been above "stovepiping" potatoes,

*The committee of the Northwest Fruitgrowers' Association on the matter of securing uniform apple packages, reported to the meeting at Portland in 1901 in favor of using only the "standard" and "special" boxes. At the meeting the following year at Walla Walla the association reaffirmed by resolution the adoption of these sizes, and urged all members to use the same. It should be noted that the dimensions given are not those used by the mills, which always quote outside measurements of top, bottom and sides.

but it didn't seem good business judgment to let those apples go to waste just because of a "measly" fraction of an inch. So he slyly ordered 500 boxes cut down a quarter of an inch in height and a half an inch in width, and had the shrunken goods hauled in over a difficult road, instead of shipping them by rail as usual. The apples were duly packed and sold as four-tier stock, but the secret leaked, and gave rise to a class of disagreeable remarks among his neighbors that will probably discourage future efforts of the sort in that vicinity.

There should be a national fruit package law prescribing the standard size or sizes of apple boxes. Some growers think one size sufficient, and this would of course save much annoyance if practicable; but more are inclined to think that two are necessary. Mr. C. H. Rogers of Watsonville, Cal., President of the Pajaro Valley Fruit Growers' Association, writes me that the growers there use one box almost exclusively, ($9\frac{3}{4} \times 11 \times 20\frac{1}{2}$) but that they feel the need of a different shape for the largest sized apples, and are now experimenting with boxes of various dimensions. Canadian laws, however, allow but one size, yet no serious complaints have arisen. This size, $10 \times 11 \times 20$, was fixed only after a careful canvass of the horticultural societies and many growers showed it to be the general favorite. Mr. Maxwell Smith, Dominion Fruit Inspector at Vancouver, tells me that upon assuming duties some two years ago he found no less than seven different sizes of apple boxes upon the Seattle market. This chaotic condition has doubtless improved since the enforcement of the Canadian law, but will never be completely abated until similar legal action is taken in this country.

Box shooks are usually hauled to the packing house or orchard and made up on the spot. To perform this operation rapidly make a form by nailing two cleats a foot long on the work bench just the length of a side board apart, and about seven-eighths of an inch inside each of these nail another, thus making two slots to receive the end boards. In the same manner cleat a short board and nail it on edge just back of the cleats on the bench, meeting them at right angles. End boards thrust into

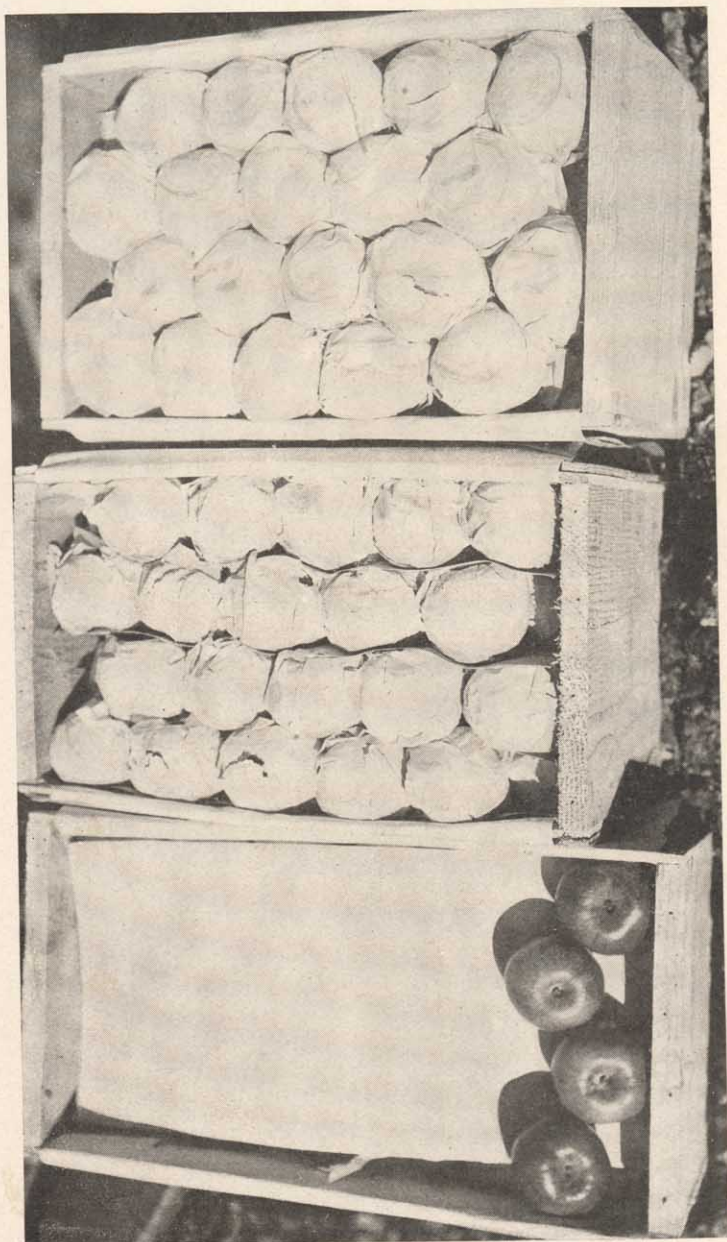


Fig. 5. Three-and-one-half tier Yellow Newtowns, the middle box opened on side.

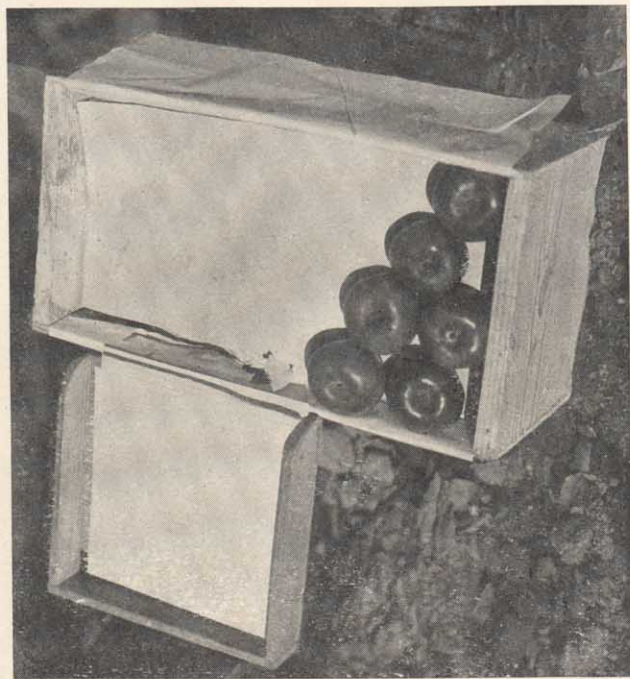
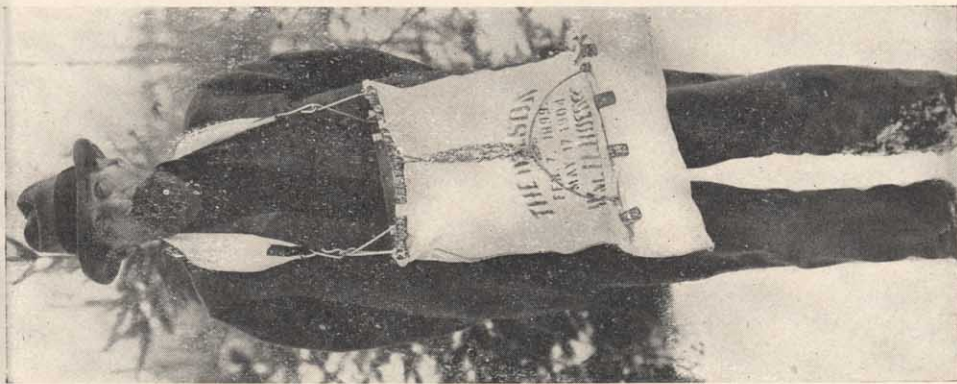


Fig. 7. Manner of starting the three-and-one-half tier pack. Paper hood attached to side of box.

these slots are thus held upright while being nailed. Box cleats should always be put on bottoms as well as tops, otherwise the thin boards are very likely to split and draw over the heads of the nails when the top is pressed into place. Cleats sometimes give a good deal of annoyance by splitting while being nailed, and in such cases should be soaked in hot water a few hours previous to using. Four four-penny nails on each end are much safer than three, both for sides, and top and bottom, and cement coated or barbed nails are more reliable than the smooth. A good man can make up from 130 to 160 boxes per ten-hour day. The average cost of boxes in the flat is ten to thirteen cents apiece, but this can be reduced by ordering in carload lots. Some fruit unions obtain them of good quality as low as eight and one-half cents. The cheaper grades are frequently made of stuff so unsound that they are dear at any price.

Use only boxes that are freshly made up and material that is bright and clean. No man that takes pride in his business or cares for his reputation will pack fruit in old or soiled boxes. When hauling to market throw a tarpaulin over the load to keep off rain and dust. If box material is carried over from one year to another, it should be carefully covered to keep it clean and bright.

PACKING HOUSES AND FITTINGS.

A permanent packing house is a convenience too often dispensed with by growers, who make shift to pack in the open air where any inclement weather brings operations to a stop, and the packers are at best subjected to much discomfort from chilly mornings and evenings. The house may be cheaply made, but should have plenty of windows, (which may even be covered with cloth) as the autumn days are short. A cheap but desirable construction is a lean-to against a south wall, securing the maximum of heat and light. The comfort of packers has a direct effect on the quality of the pack, and from a purely business standpoint is worth securing, even when they are working by the piece. Every large grower owes it to his business to have a well built, light, and comfortable packing house.

The packing table is the most important item among the furniture of the packing house. One which stands free from the walls is preferable to a shelf or table built against them, as the latter arrangement makes it necessary to interfere with the packer every time the table is replenished. The table should be built to hold the apples themselves, not loose boxes of them, as in Fig. 21. Common as the latter fashion is, it is utterly to be condemned, for the apples are not sufficiently spread out to allow the packer to choose the size he requires, but must be continually pawed over, to the irritation of the packer and the injury of the fruit. I have visited some places where the rattling of the apples in the boxes could be heard rods away; one might almost as well run them through a fanning mill! The common tables or benches partitioned off into compartments are a shade better, though far inferior to those provided with burlap or canvas bottoms. The best style of table I know of is the one in general use at Hood River, Oregon, and illustrated in Fig. 18. It accommodates two packers and allows free access to the ends for refilling. The favorite size is three by four feet, as it allows any part to be easily reached by either packer, and yet holds plenty of fruit,—that is, three or four boxes. A slight examination of the picture will enable anyone to construct the table. The full length of the legs is three feet; they come up inside the frame flush with the top, but should be sawed off on a slope inward to prevent the corners bruising the apples through the burlap. The real test of the proper height of the table is the height of the box when in position on the supports, as shown in the figure; if the packer's extended fingers just touch the lower inside corner of the box as he stands erect before it, the height is correct. Table legs three feet long usually fill these conditions. A board nailed across the end and another running across underneath serve to support the box at a convenient angle for packing. The latter board should, in addition to being nailed, be fastened with wire, or in some equally secure manner, as there is constant and often heavy pressure upon it. Commonly the box supports are arranged at diagonally opposite corners, so that each

packer may have the table at his right; but, as many packers pack from the right or left indifferently, and find relief in changing about, many tables are made with three supports, (as in the illustration) or four. The top of the table consists merely of burlap or canvas, which is tacked on loosely so as to leave considerable sag in the middle. It is an improvement if a double thickness of the cloth is used and the upper tacked at one end only, allowing dirt and litter easily to be shaken off. All the apples should be packed off the table about once an hour to prevent bruises wearing upon them. The danger of bruises may also be lessened by edging the table with pieces of hose pipe thrust upon a stick. There are no high sides on this table to reach over, and the apples in its hollow are as convenient to remove as coins from the hollows of a cash till. Compare it with the table shown in Fig. 22, and its superiority will be evident. The one in Fig. 22 has a rim four inches high, the top being of canvas tightly stretched, since a sag would allow it to rest on the box supports which run across under the middle of the table. It is inconveniently large, being forty by eighty inches. To make it more portable it is not provided with legs, but rests on saw horses, and is equipped at each end with handles. (In the picture the handles are concealed by the lining papers which hang over them.)

One more piece of furniture—the nailing press—is essential to the equipment of the packing house. There are many types of these, from the crude, clumsy affairs shown in Figs 21 and 22, to the highly effective one shown in Fig. 17. Before describing the latter it will be well to point out some of the defects of the former. Such a press as that shown in Fig 21 is a common type. Only one end of the box cover can be drawn into place at a time, and it takes some fussing to adjust the cover boards just right. The cross bar which rests on the cover interferes with ease in nailing, and there is no provision for holding the cleat. Moreover the severest pressure comes over the end row of apples, instead of upon the edge of the box, as it should. Some have improved this form by adding another clamp so that both ends may be clamped simultaneously, but even then it is far from sat-

isfactory. The press shown in Fig. 22 is a simpler affair, but open to the same objections as the double clamp press just mentioned. Now turning to the press shown in Fig. 17, which is in general use at Hood River, we find all of these objections cleverly met. The box being placed in position on the press, the cover and cleats are clapped into place, and pressure on the foot lever brings all down tight ready for nailing. The first pressure on the lever brings the arms inward, thus truing up the cover boards automatically; then, as it descends further, the arms are drawn downward, clamping boards and cleats tightly to the box. The pressure is exerted directly over the box ends, and the claws which engage the cover are so spaced as to be entirely out of the way of nailing. The plan of construction of this press is given on another page, and accompanied by a full description that should enable any grower to make one.

MANAGEMENT OF PACKERS.

Few men are fit to pack their own apples, as it is too hard for them to see the worm holes. No fruit union can afford to allow members to do their own packing, and even unorganized communities would benefit greatly by employing the same body of trained packers successively at the various orchards. Even isolated growers should endeavor, if their orchards are large, to train a group of expert packers and employ the same ones as far as possible year after year. This is the way to build up a reputation that has a cash value.

The success attained by the Apple Growers' Union of Hood River is so marked that it seems advisable to describe their system of handling packers. The latter are under complete control of the manager, who directs them daily where to go. When a member has picked enough apples to justify commencing packing, he notifies the office. This notice is listed with others, and packers are sent to the various places in the order of notification as nearly as practicable. It has been found very advantageous to organize the packers in crews of four, each headed by a foreman. Four packers make about the right number to handle the

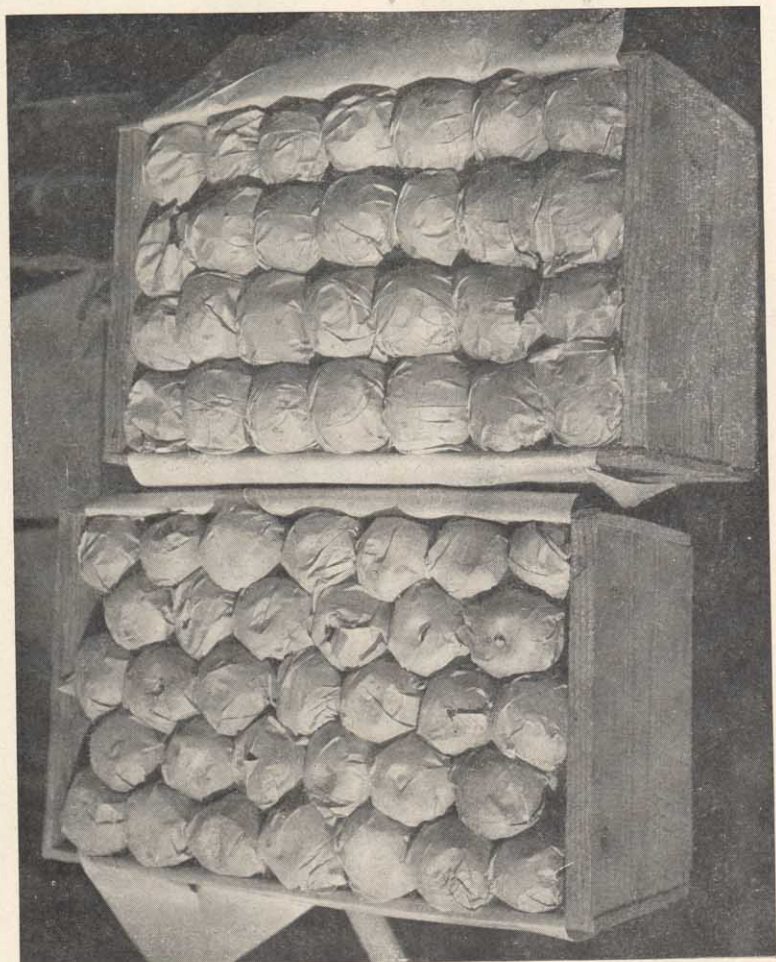


Fig. 8. Four tier and four-and-one-half tier packs, wrapped.

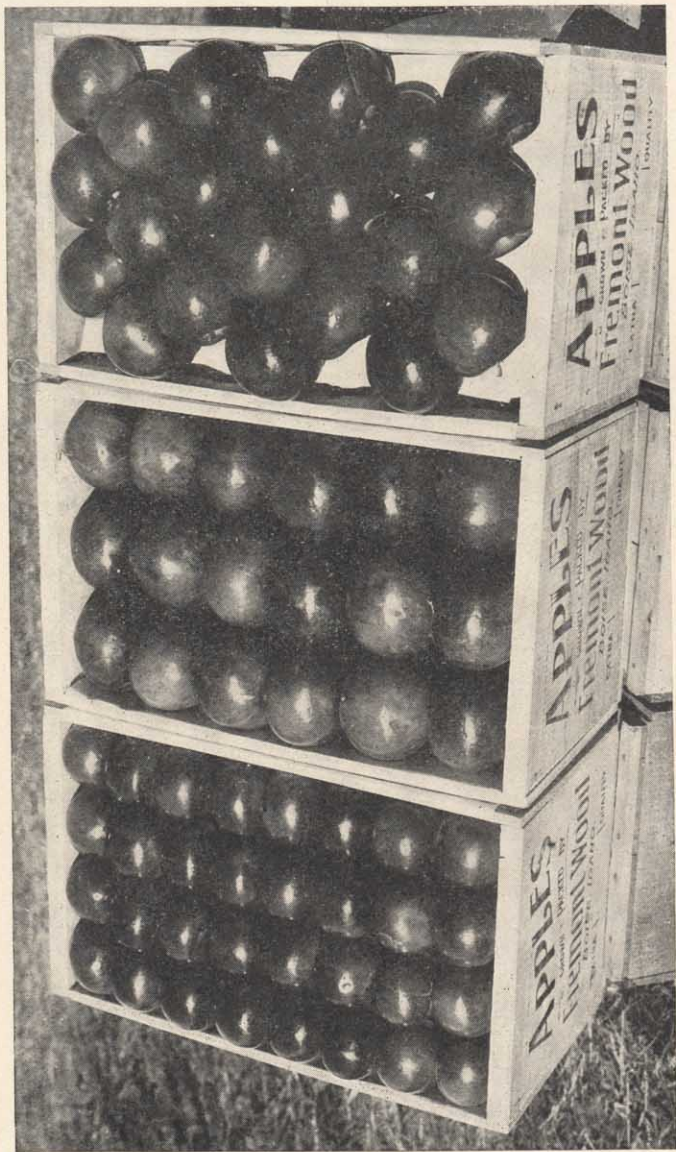


Fig. 9. Three tier, four tier, and off-set packs, unwrapped.

crop of the average grower; they just supply two tables, which are all the ordinary packing house will conveniently accommodate; and are as many as one foreman can attend to thoroughly. In some other localities only one foreman is provided for as many as a dozen packers, and too often confusion reigns. The foreman does no packing, but is kept busy seeing that every box is properly packed, and teaching and helping inexperienced packers. He sees to it that all are supplied with boxes, papers, and fruit; that boxes when filled are promptly removed; and that everything goes smoothly. He stamps on the end of each box the number and name of the apples contained, and O. K.'s it with his own individual stamp. For small jobs, especially where there is room for only one to work, a single packer is detached from a crew.

The customary price for packing is five cents a box for grades larger than five tier; for the latter, and smaller grades, six cents. Under this scale of prices the apples must be placed on the tables wiped and practically free from culls. Wiping is essential where the fruit is sprayed late in the season with any mixture containing lime, not only because of the untidy appearance of the fruit, but the disagreeable suggestion to the consumer that it is poisoned. That no actual danger exists has been repeatedly demonstrated, but somehow this has not made the market very brisk for whitewashed fruit. Some who spray with arsenate of lead find wiping hardly necessary, the deposit is so light; but it is a good plan to wipe at least all red apples, if for nothing more than to remove the dust. Apples which are allowed to go into a sweat before wiping are very difficult to manage, as the coating of spray becomes gummy and cemented to the skin. A pair of cheap cotton gloves is much superior to a rag for wiping, as the operation is not only more quickly performed, but the hands do not become numb handling the cold fruit. Wiping and grading may be conveniently done at one operation.

If more than eight boxes in one hundred have to be culled out by the packers, an extra charge is made. Complete elimination of seconds and culls is of course highly essential to a first-

class pack; nor is it so wasteful a process as some growers might think, but will often be found actually to be a measure of economy. Suppose, for instance, a man finds he has apples enough to pack 100 boxes if he is easy on the culling, but that rigid grading will give him only 80. To choose the latter course may seem like a sheer waste of 20 boxes, but when he figures up the extra expense of packing the larger number, together with the lower price the ill-graded fruit brings, it will not take any special revival service to convert him to belief in the former course. The account might read something like this:

CULLED TO 80 BOXES.

RECEIPTS.

80 boxes apples at \$1.00.....	\$80.00
20 boxes seconds and culls at 30c.....	6.00
	<u>\$86.00</u>

DISBURSEMENTS.

80 box shooks at 10c.....	\$ 8.00
Making 80 boxes at 1½c.....	1.20
Packing 80 boxes apples at 5c.....	4.00
Freight on 80 boxes at 30c.....	24.00
	<u>\$37.20</u>

Net profit.....\$48.80

CULLED TO 100 BOXES.

RECEIPTS.

100 boxes apples at 75c.....	\$75.00
	<u>\$75.00</u>

DISBURSEMENTS.

100 box shooks at 10c.....	\$10.00
Making 100 boxes at 1½c.....	1.50
Packing 100 boxes apples at 5c.....	5.00
Freight on 100 boxes at 30c.....	30.00
	<u>\$46.50</u>

Net profit.....\$28.50

These are conservative figures, and the difference in profit is apt to be more rather than less. Poorly graded apples are often difficult to sell at any price, but carefully sorted and packed fruit seldom goes begging.

Paying by the day would probably, under wise management, produce a better pack than by the piece, since the latter method

to some extent puts a premium on haste and carelessness. It would be difficult, however, to arrange a just scale of prices under the day system, and some growers always lose money by this arrangement because they are not ready when the packers arrive, or have no conveniences or comfortable quarters for them. This last objection proved so serious in the union at Hood River that paying by the day had to be given up, though at orchards where adequate preparations for the packers had been made the expense of packing a box was found to be only four and five-eighths cents. Packers must be trained to the business, and seldom become really expert until the second or third season. Not every one can become a first-class packer, as it requires a naturally quick hand and good eye for size. Beginners should not expect to get more than half wages the first season.*

STYLES OF PACKS.

There are a large number of styles of packing apples, varying with the taste and caprice of individual growers, but only a few of them are worth attention here. Perhaps the simplest is the adaptation of the old barrel pack of the East, in which the bottom and top are faced, the apples in the middle being simply poured in. It is a slovenly, not to say deceitful pack, requiring no grading except to sort out the big ones for facing. Fortunately it is seldom used, and then mostly for inferior fruit that is too small and low priced to justify anything better.

Of the better class of packs, in which each apple is put individually into place, the three sorts most commonly in use may be designated as the "straight", "diagonal", and "offset". The straight, or square, pack (Figs. 10, 12, and 13) is made up of rows running straight across the box and presents perhaps the neatest appearance of any, but at the same time is severest on the fruit, as each apple is squarely opposed to its neighbors, instead of slipping into the recesses between them as in the other styles. It may be put up in three ways, as the size of the apples requires, which are called from the number of layers and rows in a box

*See Appendix 1, Advice to Growers and Instructions to Packers.

the three-tier, (Fig. 9) four-tier, (Fig. 10) and five-tier pack (Figs. 12 and 13). A six-tier pack is of course possible, but no one in the West cares to bother to pack such small stuff. The number of apples in the box in each of these straight packs may be varied considerably*, but reliable men of long experience in the business assure me that no other numbers than those mentioned below are necessary if the fruit is carefully graded. All apples that can not be put readily into one of these will go into one of the diagonal packs and much confusion be avoided. These are the figures:—

The three-tier pack (the largest apples packed) should contain 45 apples to the box, (5 tiers long) or 54 (6 tiers long).

The four-tier pack should contain 96, (6 tiers long) 112, (7 tiers long) 128, (8 tiers long) or 144 (9 tiers long). The 144 is seldom used, but is occasionally necessary with very flat apples like the Wagener.

The five-tier pack should contain 200, (8 tiers long). This is the smallest apple that most growers care to pack, though occasionally one puts up 250, (10 tiers long) as in Fig. 13.

It is one of the pretty points about the box package that the exact number of apples contained is always known, and, if stamped on the box, as it should be, gives information much appreciated by the buyer.

The "diagonal pack", (also variously called the "orange", "pear", and "diamond", though these names are more properly applicable to the "offset" pack) is so called from the diagonal or oblique course taken by the rows. It is used for sizes intermediate between those suitable for the straight packs, and by some growers for all apples as far as possible which are wrapped. It should be used in preference to the straight pack whenever practicable, since the opposing of apples to spaces in successive layers protects them from bruises better than the straight style. Only two kinds of the diagonal pack are commonly used, the three-and-

*Mr. E. C. Dickerson of Orchard Park Farm, North Yakima, Wash., sent me a list of nine numbers which might be put up in the four-tier pack, and eleven in the five-tier.

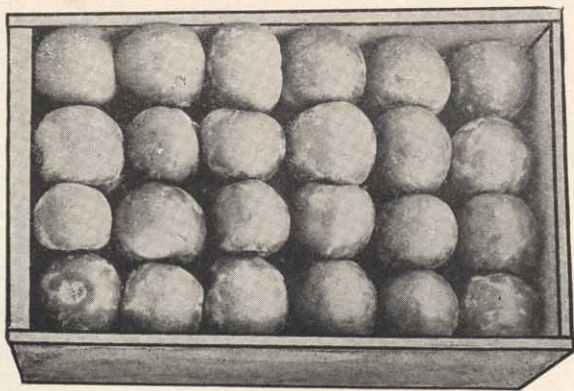


Fig. 10. Four tier, "ninety-sixes,"

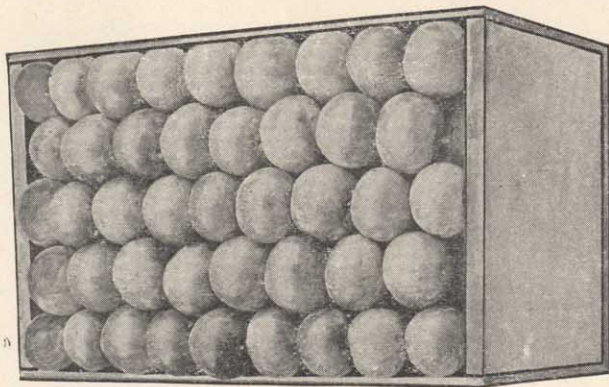


Fig. 11. Four-and-one-half tier,
213 to the box.

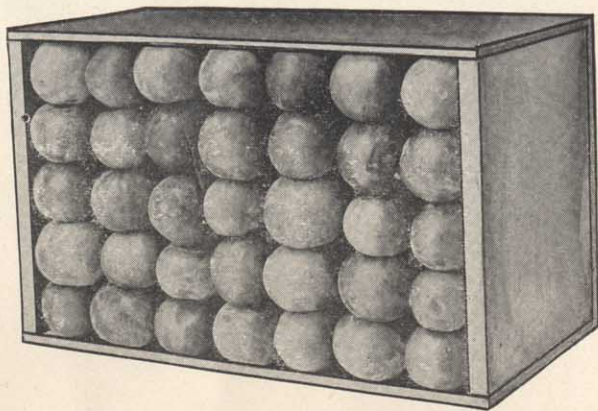


Fig. 12. Five tier, 140 to the box

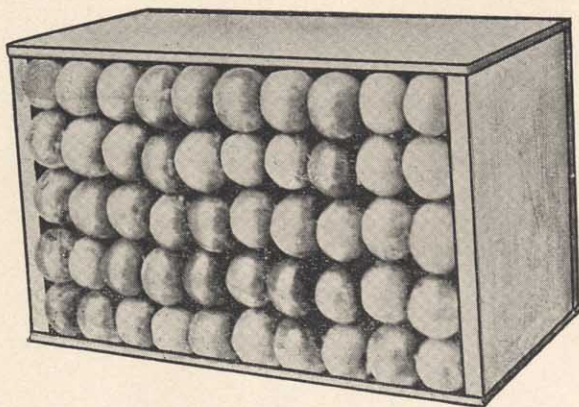


Fig. 13. Five-tier, 250 to the box.

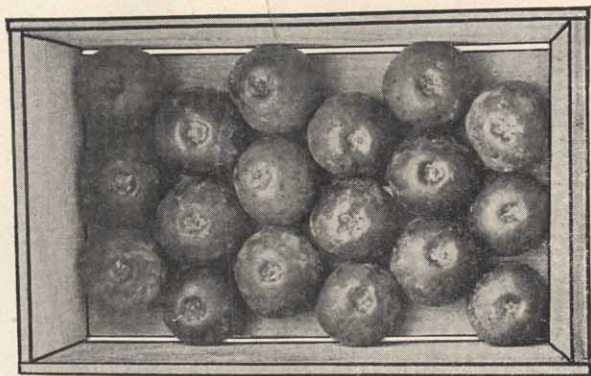


Fig. 14. Manner of starting the off-set pack.

one-half and four-and-one half-tier, so named from the number of apples required to reach across the box. The former will go 64, 72, or 80 apples to the box; the latter 150 or 175. No other numbers are necessary or desirable.

The "offset" or "orange" pack (Fig. 9, at right) is similar to the diagonal—in fact may be considered the diagonal with the rows running lengthwise, (Fig. 9, box at right). Fig. 14 shows how to start the pack. It is not quite so uniform and attractive as the "diagonal", as the stems are not all turned the same way, and the vacant spaces at the sides are too large and numerous. The latter objection is the more serious, because when the box is opened on the side, as buyers often do for purposes of examination, the observer is confronted with as many holes as apples, while the diagonal pack under like circumstances shows only two holes as each end. (Fig. 5, middle box) A box packed in this style contains as a matter of fact three or four apples less than the diagonal pack, a feature which some growers do not consider a fault.

THE OPERATION OF PACKING.

A few years ago the crop of potatoes in the East was immense. Colorado, as usual, had raised many thousands of sacks, but found the price so low that it would scarcely cover the freight charges. In this emergency "the man of the hour" appeared in the person of a grower who washed his potatoes carefully, put them up in neat ten-pound sacks with an attractive label, and sent them on to Chicago. A fancy price was asked, but the stuff went off with a rush, and netted the grower the highest returns he had ever received. Cases similar to this are known to most farmers. Very often the manner in which fruit or vegetables are put up has more influence on the price than quality itself. Some of the details given below as essential to a first-class pack will seem to many needlessly elaborate, or merely fussy, but there is plenty of experience to show that they all pay handsomely. It is a little easier and cheaper not to line the boxes, use early

papers, or wrap the fruit, yet trifles like these make perfection—and fat pocketbooks.

The first item in a perfect pack is a clean box. As cooking recipes in old books sometimes quaintly begin—"Take a clean sauce pan," so the directions for packing apples might appropriately begin with—"Take a clean box." Get nice white box material and keep it clean. After placing the box upon the supports at the side of the packing table, which permit it to incline conveniently toward the packer, (Fig. 18) the lining paper is put in. Lining papers are of cheap, soft stock, in width slightly less than the length of the box, and about 26 inches long. One sheet is required for each side, the two overlapping generously in the bottom of the box, enough being left outside to fold over the top. (Figs. 7, 18, and 19.) To prevent tearing along the bottom corners when the bottom bulges, a plait is folded into each sheet about six inches from the end. Packers do this very deftly by catching the paper at the edges so as to turn a fold into it, and crease it by drawing it swiftly across the knee. The plaits lie along the corners and provide plenty of slack. Next a "layer paper", consisting of a piece of thin but soft and spongy cardboard just the size of the box, is laid in the bottom. The packer at the right in Fig. 20 is just placing one in the box. Then hang the paper hod on the edge of the box, if the apples are to be wrapped, and you are ready to put in the first layer of fruit. The construction of the hod for holding wrapping papers may be readily seen from Figs. 7 and 20. Two right-angled hooks in the edge engage the edge of the box, and a bracket beneath supports it against the side. It is by far the most convenient device for the purpose. To assist in picking up the papers, packers usually wear a rubber finger stall on the thumb or first finger. Practice enables them to wrap the fruit very rapidly. An apple is picked up in one hand while the other reaches for a paper, (Fig. 19, packer at left) the two are slapped together, as it were, and with a single dexterous twist the loose edges are gathered into a little bunch over the stem. (Fig. 20, packer at left). It seems to take scarcely longer to wrap the

fruit than to place it in the box unwrapped, so quick and continuous is the motion of wrapping and depositing in the box. Papers 8x10 inches are adequate for all but the largest apples. Frequently growers stamp their name on the wrappers, thus advertising it more surely, since middlemen sometimes paste their own box label over that of the producer. Many deem it unnecessary to wrap, and for many local markets it doubtless is, but for the Eastern and export trade it is all but indispensable. The wrappers make effective cushions, help to retain the aroma of the fruit if stored, and take up slack in case of shrinkage. They also impress the buyer with the fact that extra care has been given the product, and hence attract the best trade. The advisability of using layer papers is more open to question. They are not at present in very general use. California growers look upon them with disfavor, but at Hood River they are in universal use. In this state they are seldom used. In the diagonal and offset packs they make an admirable springy cushion for each apple, as is well shown in the middle box in Fig. 5, from which the side has been removed. In the straight packs this advantage disappears, but as an absorbent and in preventing the spread of decay the layer papers are highly effective, especially when wrappers are not used.

The manner of putting up the straight pack is too obvious to need much description, though the judgment to know whether the apples on the table will go best into this or one of the diagonal packs must be gained by experience. The apples may of course be graded so closely beforehand that each lot will pack into one size and style, but this is laborious and unnecessary with skillful packers, who from a large table choose swiftly and almost instinctively the right size. The apples should fit very snugly, yet if an apple at the end of a row has to be crowded in by main strength, either the packer has a poor eye for size or did not choose the right pack to begin with. Let him spare the grower the anguish of seeing a fine apple crowded down against the side of the box till the skin slips.

The way to start the diagonal pack is clearly shown in Figs.

5 and 7. It becomes still simpler by packing the box from the side, as some do, for then it resolves itself into the offset pack of Fig. 14, each row alternating with, or offsetting, its neighbors; but it is really much more convenient to work at the end of the box in all styles of packs. The box at the left in Fig. 5 shows how to begin a layer of the three-and-one-half-tier pack. The two apples in the left hand corner are first placed diagonally across it, then one snugly in the right hand corner, and a fourth above and at the left of this wedges all securely into place. Then follow two more apples, as in Fig. 7, and the layer has advanced far enough so that anyone can finish it. In the middle layer two apples were placed across the right instead of the left hand corner, while the bottom layer is identical with the top as shown, hence each apple in each layer comes opposite a space in the adjacent layer. When finished the box should present the appearance shown by the one at the right in Fig. 5. The four-and-one-half-tier pack is started by placing an apple in each lower corner and one in the middle; two are then pushed down as far as they will go on either side of the middle apple, and followed by three corresponding in position to the first three, and so on until the layer is complete. Study the box at the left in Fig. 8 in connection with this, and all will be clear.

The offset pack is very simple, and the manner of starting it so plainly shown in Fig. 14, that no description is necessary. The apples of the next layer should alternate with those of the first, that is, the first apple will be placed in the lower right hand corner, bringing it over the vacancy left by the bottom layer.

There is still one important feature of a good pack that has not been mentioned, and that is the crown or bulge in the center. This is a bugbear for the beginner, as it is difficult to make the end rows come flush with the ends of the box, or slightly above them, and yet have the center about an inch and a half higher. To secure a proper crown it is often necessary to turn part of the apples in the middle layer, or layers, flatwise, if being packed on cheek, or vice versa, yet skillful selection of the larger apples for the center will usually make this unnecessary. In the case of very

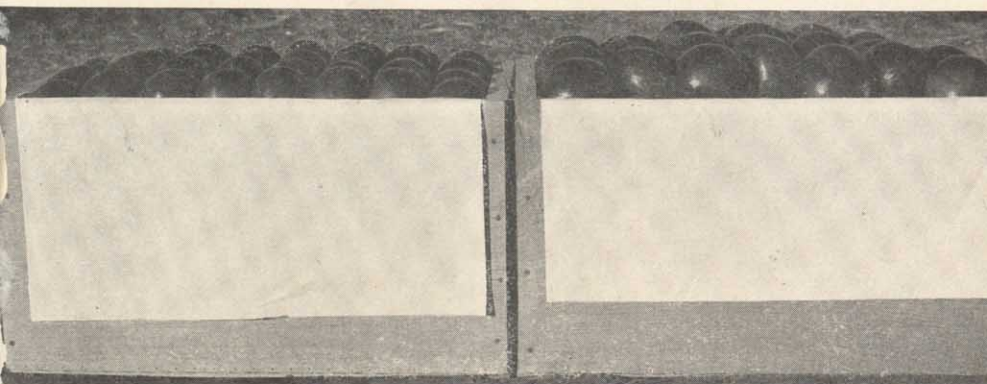


Fig. 15. Profile of two packs, showing proper crown.

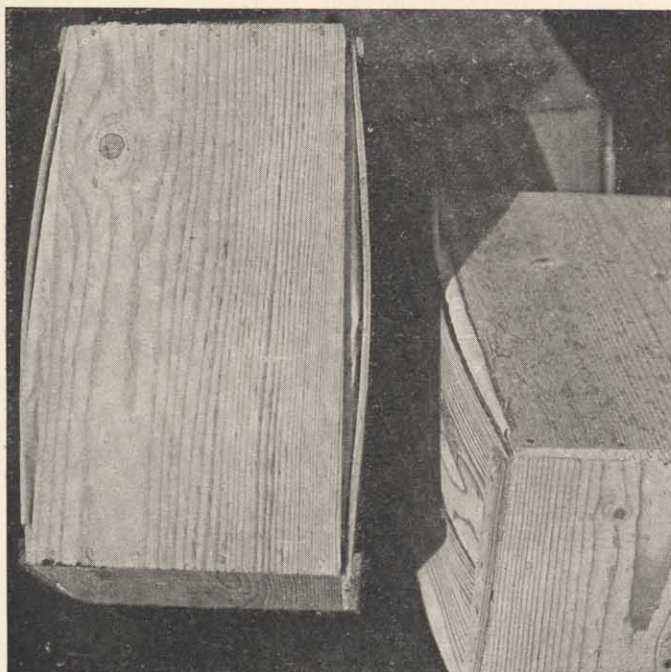


Fig. 16. Side view of boxes after nailing, showing proper bulge in top and bottom.

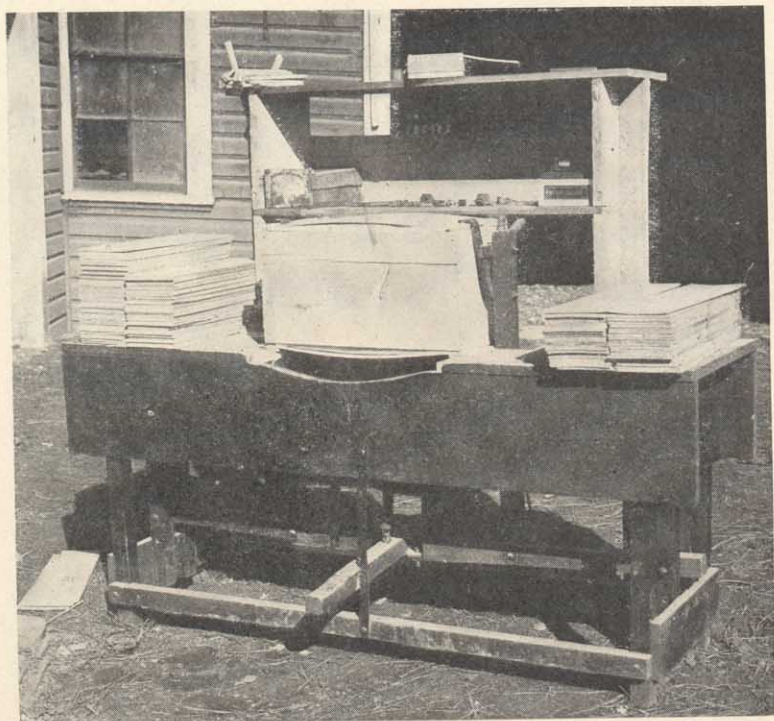


Fig. 17. Nailing press, best type.

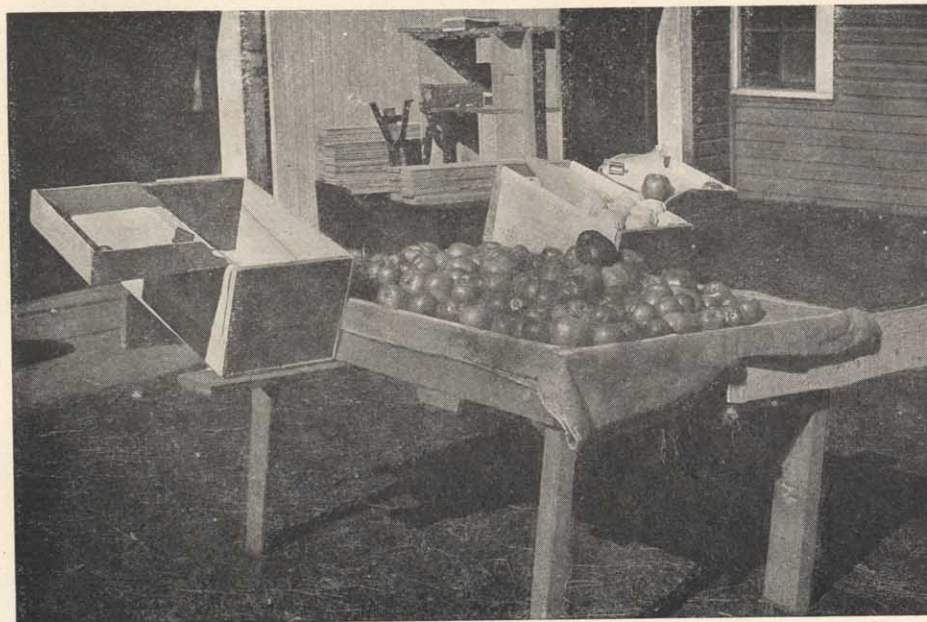


Fig. 18. Good style of packing table.

large apples it is sometimes impossible to bring them low enough at the ends, as in the box at the right in Fig. 15, and then it becomes necessary to lay a cleat at each end under the cover. Frequent resort to this, however, is strong evidence of faulty packing, and is not permitted by most growers. The box at the left is properly crowned. A crown of an inch and a half gives a bulge at top and bottom, when the cover is nailed on, of three-quarters of an inch, which experience has shown to be about right (Fig. 16). A greater bulge means too severe pressure on the fruit; a less, too great danger of its becoming slack. In a properly packed box the apples in each layer should be so snugly fitted into each place that when the hand is placed upon them and an attempt made to move them back and forth, there should be no perceptible slackness. Yet if there is no bulge, an otherwise perfect pack soon becomes slack from handling and shrinkage.

Two essentials of a perfect pack are honesty and uniformity,—that is, the apples in the middle or bottom of such a pack are just as good as those on top, and all perfect; all are of an even size and properly colored; and every box is packed with the same degree of care and skill, so that the buyer may feel certain that it is a case of "one seen, all seen". Too rapid work is frequently responsible for faulty packing, especially where the oversight is not thorough. It is reported from some places that packers put up more than 100 boxes per day, but it is safe to say that even the most expert can not put up more than 75 perfect boxes in ten hours, and very few can do more than 50 well. The latter figure means good wages to the packer. Ease and dispatch in packing are much conditioned by the preliminary arrangements. If the equipment is good and everything convenient, the results will be far more satisfactory to all concerned. Let the grower consider well Figs. 19, 20, 21, and 22, and choose his way accordingly.

Attractive labels (Fig. 23) add much to the appearance of the boxes, and are a valuable means of advertising and building up a special trade. Whether labeled or not, however, the box should be marked on the end with the name of the variety, the

number of apples contained, and the grade, especially if the latter is anything but "first." At Hood River they add to these marks the name and number of the grower, the number of the packer, and the number of the inspector. Under-colored fruit is also marked "L" for "Light." Each packer is assigned a number for the season, and provided with a stamp with which he stamps it on each box as completed. He also marks with pencil the number of apples in the box to guide the foreman, who does the rest of the stamping. Under this system faults are easily traceable to the committer, and incompetents weeded out. The inspection of the foreman is a check on the packers, and one on the foreman may be had by the grower opening a few boxes out of every hundred at random; or in case of a fruit union, this may be done upon delivery at the warehouse.

The marking of fruit packages is a proper subject for legislation. Not till false or misleading marking is visited with a legal penalty, and the law enforced by rigid inspection, will the honest packer and the consumer be properly protected. Such a law, known as the Fruit Marks Act, has been in successful operation in Canada some four years, and some of its provisions are so suggestive to those who wish to improve their pack that they are here reproduced.* Every grower should work for such a law in this country.

In piling and hauling the boxes care should be taken always to lay them upon their sides, as the bulge in top and bottom allows the fruit to be easily bruised if piled upon the latter. This precaution is especially important when loading into cars.

Considerable labor is involved in loading a car. Free circulation about the boxes, together with perfect immobility, must be secured. Fig. 23 shows how this is accomplished. A row of boxes is laid across the car with a space of several inches between each, and strips reaching to the sides of the car nailed along front and back edges, thus securing every box against any side-wise motion, and also providing an air space between this row

*See Appendix, 2.

and the one above. A generous space should be left at the top of the car where the warm air gathers; six rows high is quite enough for the ordinary car, and many prefer to make but five. When the car has been filled to the door from either end, it must be braced against the severe endwise thrusts incident to frequent stopping, starting, and switching. Two-by-fours make the best material for this bracing. Uprights are stood in front of each tier of boxes on either side, and nailed lightly in place; across these three pieces are nailed, one on the floor, one near the top, and one in the middle. (Fig. 24.) Braces are then cut just a little too long to fit between opposite cross pieces, driven home with a maul, and securely nailed. Four or five braces are thus wedged into place between each pair of cross pieces, holding every box in place as in a vise. Fig. 24 shows the first brace driven into place. A car will hold about 600 boxes.

MARKETING.

Most growers find it easier to produce good fruit than to sell it at a good price. Even when by dint of care and skill they have put up a first-class pack there is still a painful element of uncertainty about the returns, after the gauntlet of railroads and commission men has been run. Many are the bitter experiences growers in this state have had, especially in connection with the more perishable fruits. Many prune growers have known what it is to forward money to pay the freight and commission charges on a car of prunes, which reached market so foul and hoary-whiskered that it was only a scavenger's job to unload them. As a result many prune growers are giving up in despair, and each year sees fine orchards uprooted to make way for some safer crop. Blame for this ugly condition no doubt often rests to some extent with the grower and packer, but it is notorious that cars in many instances have not been properly iced, and not infrequently cars could be obtained only after vexatious delays. Better service in the latter respect might be obtained if each grower would furnish, each year, an estimate of the amount of fruit he expects to ship, to some individual such as the State Horticultural

tural Inspector or the Vice-President of the Northwest Fruit-growers' Association for this state. This person could then advise the railroads as to the number of cars that would probably be required, and so permit them to make adequate provision for moving the crop. A fruit union could undertake this service to excellent advantages. Icing is fortunately not one of the difficulties which confront the apple shipper, but he has other problems scarcely less difficult of solution.

Marketing fruit is a business by itself, and if properly done requires the undivided attention of those who engage in it. Thus say the commission men when put on the defense by insinuations that they are only obstacles to free and natural intercourse between the producer and the consumer. The commission men are undoubtedly right, and they seem indispensable under present conditions; but if intermediary specialists in selling fruit are necessary, there is no reason why the producers should not employ one at a salary and thus unite to some extent at least these divergent interests. Producers can do this most feasibly by banding themselves into a union, the most successful way of handling fruit than has yet been devised. The manager of the union then becomes their selling agent, who should devote himself assiduously to the study of the markets, and possess the ability to deal advantageously with commission men and other buyers. It is true many fruit unions have failed dismally through petty jealousies, unreasonable suspicion, and mismanagement, nor is this state without examples of such; yet when really successful they are almost ideal, and well worth attempting and reattempting in any apple growing community. The solution of the marketing problem lies mainly in the direction of organization. Once a union is fairly launched with a board of honest and influential directors representing all parts of the community, and an efficient manager—conditions surely not impossible—success is only a question of a little sweet reasonableness and patience. Leave the selection of the manager to the board, but do not expect them to get a first-class man for a second-class

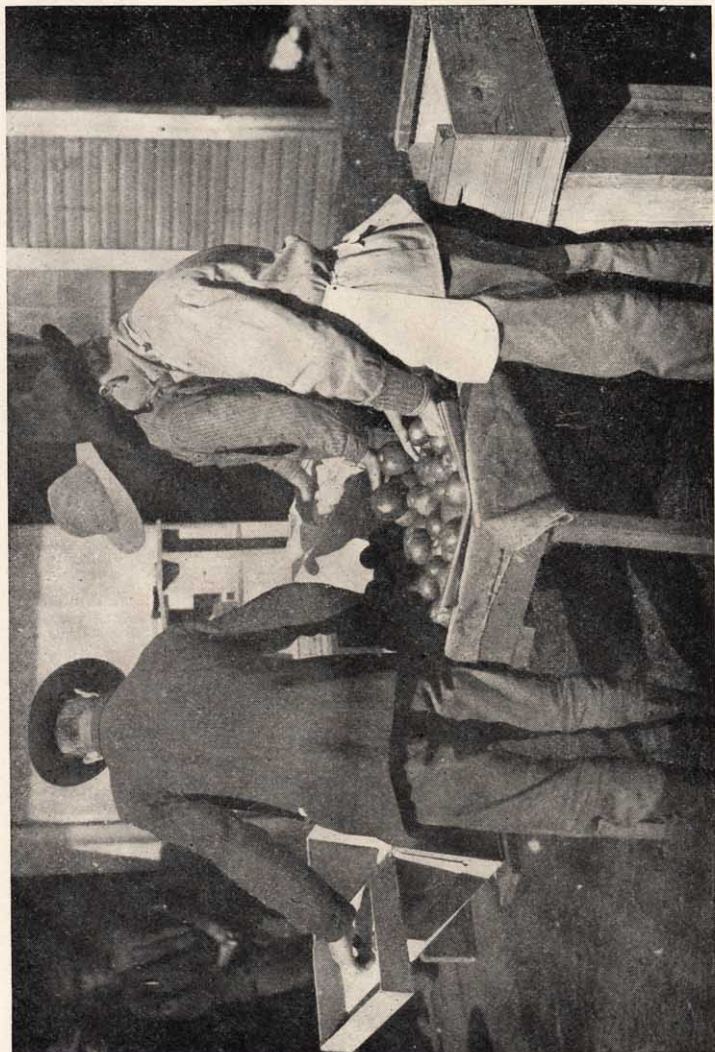


Fig. 19. Packers at work at table. The foreman stands at the rear by the cull box.



Fig. 20. Another view of the same group.

salary. Upon this officer largely rests the destinies of the organization.

One of the most successful fruit unions in the Pacific Northwest is the Apple Growers' Union of Hood River. Organized only in 1903, this Union has in two seasons built up a reputation for an honest and uniform pack that has doubled and tripled the prices received for apples, and made them eagerly sought in eastern and foreign markets. Before 1903 Hood River was producing as fine fruit as since, but the price received for Spitzenburgs was then about 85 cents; the first year the Union operated the price advanced to \$2.00, and last year the entire output was sold by contract at \$2.60 per box. The Union now has 115 members and controls 85 per cent of the apples produced in the valley. The plan of organization and business methods of so successful a union are sufficiently important to the fruit growers of this state to merit description here. The constitution and by-laws are not obtainable in printed form, but are almost identical with those of the Hood River Fruitgrowers' Union*, the chief difference being that the stock is \$10.00 a share instead of \$5.00; and of this \$2.50 is paid up. Each member must hold at least one share, and many are content with the minimum holding. The entire expenses of the organization are met by a charge of five cents on every box of fruit handled. A receipt is given the driver who delivers the fruit at the warehouse, and from a copy of this retained at the office the fruit is charged on the ledger on the debit side. When the boxes are loaded on the cars they are credited on the ledger, balancing the previous entry. When the check comes back from the buyer each grower is credited with his proportionate share, less the charges of the Union. The Union guarantees every box, and has established such a reputation that its products are sold in the exacting English markets without inspection. No seconds or poor varieties are allowed to go out under the Union label; the grower is expected to dispose of these himself. Considerable economies have been effected by the ability of the Union to buy in large quantities; boxes

*See Appendix, 3. The principal crop handled by this union is strawberries.

formerly costing $10\frac{1}{2}$ cents are now obtained for $8\frac{1}{2}$ cents; lining and wrapping papers are bought by the carload at a considerable saving, and this year several hundred dollars will be saved by ordering a carload of arsenate of lead. The Union can also afford to use the telegraph to an extent impossible to an individual, keeping in touch with the markets, and diverting shipments when necessary to avoid glutted markets. By belonging to a commercial agency the Union is enabled to avoid losses from bad accounts. It is powerful enough to buy in fruit offered by outsiders at less than the prevailing price, if it sees fit, and thus protect the market; or it may, if it chooses, make public the daily quotations, and thus largely prevent underselling. Each year a little before harvest a careful estimate of the size of the crop is made by the manager of the Union, and a letter stating the number of boxes of each variety of apples the Union expects to have is sent to various commission houses, asking for sealed bids on carload lots or less. Upon acceptance of any bid the Union requires and gives a contract, and asks a reasonable payment to bind it.

HOW TO ORGANIZE.

It is a simple matter to organize a fruit union. Notify a few persons whom you think especially desirable to meet at a certain time and place, being careful not to let any of the objectionable kind hear of it. Upon meeting, organize by electing a chairman and secretary. The chairman will then call upon some one to state the object of the meeting, and allow informal discussion of it until ideas are pretty well formulated. A motion is then in order to appoint a committee to draft a constitution and by-laws, when adjournment should be taken to a future day. On reassembling, the constitution can be adopted and signed by those present. The directors and other officers provided for by the constitution may then be elected. It is nearly always advisable to incorporate, which may be done by filing a copy of the articles and names of the directors with the State Auditor. The incorporation fees amount to about twenty dollars.

THIS WAY LIES SUCCESS.

APPENDIX I.

[This circular is distributed among the members of the Union.]

Hood River Apple Growers' Union.

Advice to Growers.

1. PICK ALL APPLES as soon as they have attained their proper size, color and maturity, and save loss from dropping. In picking, be careful not to pull off fruit spurs or stems. Your pickers, packers, and wrappers must not bruise apples by dropping into the bucket or basket or in transferring from the field box. Be careful and do not allow pickers, packers, or wrappers to break off stems of the apples.

2. THE UNION will notify you by mail when a variety is to be packed and how. Upon receipt of such notice, pick, wipe and have all arrangements made for packers, as follows: Packing house, boxes, paper, packing table, nailing machine, nails, etc. Notify the Union when you are advised a variety is sold when you will be ready for packers. Packers will be sent to growers in order of notification.

3. THE PACKING HOUSE should be arranged to let in plenty of light, and keep out as much wind as possible. Provide sufficient lamp light for late in the afternoon, as it gets dark early.

4. PACKING TABLE. Each grower should have tables for four packers. Be sure and get one.

5. PAPER. See that you have plenty on hand for your crop. Carload for sale at Union; price, cost laid down.

6. BOXES. Have sufficient number on hand. Keep them clean. Do not pack fancy fruit in dirty boxes. Dirty boxes buyers will not receive. Therefore the Union will decline to accept them.

7. SORTING. Cull out all wormy, scabby, scaly, bruised, misshapen, or otherwise imperfect apples. Packers in final sorting at prices agreed will not be required to cull out more than 8 boxes in 100 without extra pay. Sort your apples into the standard or special box, whatever they will most likely pack into to the best advantage. This will save a great deal of time. Growers in assorting are requested to put four-tier and larger in boxes by themselves and all 4½ and 5-tier in boxes together.

8. WIPING. See that apples are properly wiped for the

packers. In piling boxes after sorting, put cleats between so apples won't bruise.

9. APPLES ON PACKING TABLE. Growers will be expected to see that the packing tables are kept properly filled for packers.

10. PAPER AND BOXES HANDY. See that empty boxes and paper are conveniently arranged for the packers.

11. SETTING OFF BOX. Each packer will be required to set off his own box and put on the lower left hand corner of the end of the box with a rubber stamp his packer's number.

12. STENCILING BOX. Each packer will write on the end of the box the number of apples contained in the box. The grower or foreman will stamp on the end of the box, in the middle and at the top, the number of apples contained in the box, and underneath the name of the variety. A complete set of stamps for this purpose will be carried by each foreman of a gang.

13. GROWER'S NUMBER. Each grower will be required to put on his number with a rubber stamp in the upper right hand corner of the end. If you do not have a number, call at the office and one will be presented free. If you do not fully understand the stamping of boxes, ask the foreman, or the manager will explain.

14. ALL STAMPING must be on one end of the box.

15. PACKERS must pack apples so that they will not be above the top of the box at either end. Growers will be allowed to refuse to nail a box unless so packed. If absolutely unavoidable in very large apples, the grower will be sure to put on cleats under the lid at both ends.

16. PILING AND LOADING. Pile your boxes, after being packed, on the sides and load in the wagon the same way.

17. HAULING. Haul on springs and use a wagon cover to keep off dust and rain.

18. ALL BOXES should have four nails on sides, tops and bottoms. A great many boxes came in last year bursted. We therefore request you to use 5 or 6 penny cement coated nails, which are the only proper nail to use.

19. FINALLY. We grow fancy fruit. Our reputation and prices this year and in future depend on our pack. Do all you can to assist the Board of Directors in carrying out their plans. These requests are made by them for YOUR INTEREST.



Fig. 21. Packing in the orchard.



Fig. 22. Another orchard packing scene.

Instructions to Packers.

1. A crew will consist of four packers and one foreman extra.

2. Each packer, before he is permitted to pack for the Apple Growers' Union, must have his name registered at the office of the Union and receive a rubber stamp free. He shall be required to stamp each box at the lower left hand corner when packed with his official stamp.

3. Each packer shall be required to put up a first-class pack. If upon any inspection any packer be found guilty of putting up a poor pack, or putting in apples not suitable for the pack being made, he shall bear the expense of repacking such box or boxes for the first two offenses. Upon further neglect he shall be dropped from the list of the Apple Growers' Union packers.

4. Each packer, when a box is packed, shall write with pencil upon the end of the box, in the center near the top, the number of apples the box contains.

5. Each box of apples shall be packed with about a $\frac{3}{4}$ -inch to 1-inch swell in middle of top and bottom combined, but no box must be packed so high that it will be necessary to cleat the box before nailing on the lid.

6. Each packer shall receive his pay from the grower in cash, or on a written order on the Apple Growers' Union, which will be cashed by the manager on presentation.

7. The charges fixed by the Union and agreed to by the packers for packing, will be 5 cents per box for all boxes containing 128 apples or less, and 5 cents per box for all boxes packing $4\frac{1}{2}$ tier. All 5 tier apples will be packed at 6 cents. This price shall cover any and all packs ordered by the manager.

8. Each packer will be furnished meals by the grower where he is packing, without charge, but must make necessary arrangements for his bedding.

9. Packers are required only to pack fruit properly wiped and assorted from culls fairly well by the grower before being placed on the packing table, but the packer will be required to make the final culling, which shall not exceed 8 per cent, or 8 boxes in 100. Such boxes as the packer may throw out he will be required to handle with as much care as first-class fruit.

10. Each packer must be supplied with suitable and neces-

sary room at the packing table, which must be properly and substantially made.

11. Each packer shall require the grower to supply him with empty boxes, and have the paper placed in a convenient place.

12. Each packer must set off his box when packed.

13. If the grower is not properly prepared for the packers, the packers will be at liberty to move on, or may charge the grower at the rate of 20 cents an hour for extra time spent in culling and wiping properly. It shall be the duty of each packer to notify the grower of such conditions, when existing, in advance, and should the grower make a protest, the packer will be at liberty to move on and report the matter to the manager, who will endeavor conscientiously to adjust the matter satisfactorily.

14. Packers must be sure to have the exact number of apples in the box as numbered. Foremen are cautioned to watch this. Avoid criticism by following this instruction. We are on the lookout for this sleight-of hand trick.

15. Please assist the packer. He is also a grower and your friend; and remember he is following instructions given by the Board of Directors, who are acting as directors with your interest at heart, giving one day each week of their time without pay.

[The following "Special Instructions" are printed on a small card for handing out.]

Only two stings on one apple will be accepted on all first grade apples. Any worm sting must not be larger than 3-16 of an inch in diameter, measured from outside of green ring around said sting. No sting may show an open hole; 4½ and 5-tier apples should not show over one sting unless said stings are very small. Limb or leaf rubbed or other like defects will be accepted where said defect does not break the skin of the apple, providing said defect is not larger than a 10-cent piece, if said defect is circular; if it is oblong in shape it must not be more than ¾ of an inch wide and ¾ of an inch long. This shall also apply to defects caused by cut worms while small, providing any defect does not materially affect the shape of the apple. Stemless apples will be accepted when the flesh of the apple surrounding said stem is not broken. All apples must be clean, fully matured, of good color, free from any insect pests, fungus, rust, decay or injury except

as herein specified. Deformed apples will not be accepted. Packers are cautioned to look out for windfalls and bruised apples. Green apples that will never mature will not be accepted. Spitzenbergs, Newtowns, Arkansas Blacks, Red Cheeks and Hydes Kings must all be wrapped in printed paper, boxes lined, layer paper between layers and on top and bottom. The foreman will be notified about wrapping each other variety as it is sold. Spitzenbergs sold as RED must have 70 per cent or more red color. Spitzenbergs and Newtowns that pack 5 tier must be packed in Oregon boxes. This does not apply to other varieties. These instructions will be followed on all our packs, except the clause pertaining to color, on which special instructions will be given for the different varieties.

4-tier apples include nothing smaller than 128 size.

144 size is special.

4½-tier includes 150 to 175 size.

5-tier includes 185 to 200 size.

Do not pack in dirty boxes.

Every one should keep his hands clean so as not to soil the paper or dirty the boxes in handling.

APPENDIX 2.

Canadian Fruit Marks Act, 1901.

[Extracts.]

4. Every person who, by himself or through the agency of another person, packs fruit in a closed package, intended for sale, shall cause the package to be marked in a plain and indelible manner, before it is taken from the premises where it is packed,—

(a) with the initials of his Christian name, and his full surname and address;

(b) with the name of the variety or varieties; and

(c) with a designation of the grade of fruit, which shall include one of the following six marks: for fruit of the first quality, No. 1, or XXX; for fruit of the second quality, No. 2, or XX; and for fruit of the third quality, No. 3, or X; but the said mark may be accompanied by any other designation of grade, provided that designation is not inconsistent with, or marked more conspicuously than, the one of the said six marks which is used on the said package.

5. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package and intended for sale, unless such package is marked as required by the next preceding section.

6. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked any designation which represents such fruit as of No. 1 or XXX, finest, best, or extra good quality, unless such fruit consist of well-grown specimens of one variety, sound, of nearly uniform size, of good colour for the variety, of normal shape, and not less than ninety per cent free from scab, worm holes, bruises and other defects; and properly packed.

7. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than fifteen per cent of such fruit is substantially smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package.

8. Every person who, by himself or through the agency of another person, violates any of the provisions of this Act shall, for each offense, upon summary conviction, be liable to a fine not exceeding one dollar and not less than twenty-five cents for each package which is packed, sold, offered, exposed or had in possession for sale contrary to the provisions of this Act, together with the costs of prosecution; and in default of payment of such fine and costs, shall be liable to imprisonment, with or without hard labour, for a term not exceeding one month, unless such fine and the costs of enforcing it are sooner paid.

9. Whenever any fruit in any package is found to be so packed that the faced or shown surface gives a false representation of the contents of the package, any inspector charged with the enforcement of this Act may mark the words "falsely packed" in a plain and indelible manner on the package.

(2) Whenever any fruit packed in a closed package is found to be falsely marked, the said inspector may efface such false marks and mark the words "falsely packed" in a plain and indelible manner on the package.

(3) The inspector shall give notice, by letter or telegram, to the packer whose name is marked on the package, before he marks the words "falsely packed" or "falsely marked" on the package.



Fig. 23. Manner of packing boxes in a car.

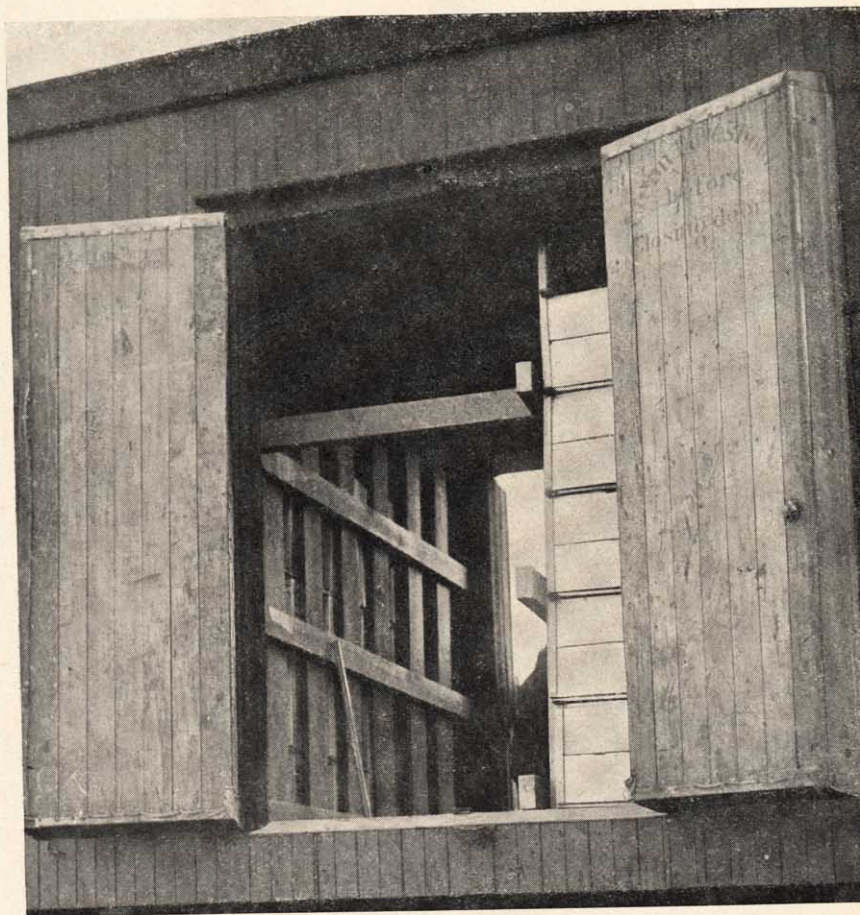


Fig. 24. View through car door, showing manner of bracing.

10. Every person who not being an inspector wilfully alters, effaces or obliterates wholly or partially, or causes to be altered, effaced or obliterated, any marks on any package which has undergone inspection shall incur a penalty of forty dollars.

Explanations for Guidance of Inspectors.

Sec. 6. 'No. 1 or XXX, finest, best or extra good quality.' The following marks also are held by the trade generally to indicate this quality of fruit: 'Choice,' 'Fancy,' 'Selected,' 'Prime.'

'Nearly Uniform' is to be taken as including any size of fruit except that which may be fairly classed as *small for the variety*.

'Bruises.' Only such injuries as produce decay or otherwise materially lessen the value of the fruit for consumption, should be counted as bruises.

'Scab.' Such as causes appreciable waste is to be considered particularly.

'Properly Packed.' 'Slacks' are to be considered as not properly packed if the condition is likely to result in permanent damage during handling or transit.

Explanatory Notes for the Owner.

If the owner marks the package 'No. 1' (or 'XXX') the fruit must be as described in Section 6, practically perfect. On reading this section carefully, it will be seen that the packer should aim to discard every injured or defective fruit, and not to deliberately include the ten per cent of inferior specimens which the law allows. This margin is meant to make the work of grading easier and more rapid than if absolute perfection were exacted in the first grade, as many of the best growers think should be done.

It should be noted that the definition of No. 1 fruit does not vary from year to year; no provision is made for lowering the standard when the quality of the crop is poor. In such a case the only result is that a smaller proportion of the fruit is No. 1.

The Act makes no restriction as to the quality of fruit which is marked 'No. 2' or 'No. 3,' but it is strongly recommended that 'No. 2' consist of fruit in every way as good as 'No. 1' except in the matter of size and colour. 'No. 3' will then include all under-sized or defective specimens which are marketable, culls being left at home.

By carefully following the above method, owners will soon establish a high reputation, particularly if they export very few of the 'No. 3' grade.

On the owner is laid the duty of seeing that the face of each package fairly represents the contents as required by Section 7. Over-facing is an offense against the Act which is most severely dealt with by the courts.

APPENDIX 3.

Hood River Fruit Growers' Union.

Articles of Incorporation and By-Laws.

Art. 1. The name of this corporation shall be "The Hood River Fruit Growers' Union."

Art. 2. The objects of this corporation shall be to secure to fruit growers of Hood River valley and vicinity all possible advantages in the marketing of their fruit, as well as to build up a standard of excellence, and to create a demand for the same.

Art. 3. The principal place of business of this corporation shall be at Hood River, Wasco County, State of Oregon.

Art. 4. The capital stock of this corporation shall be one thousand five hundred dollars (\$1500).

Art. 5. The value of each share of such capital stock shall be five dollars (\$5).

BY-LAWS.

Section 1. The name, place of business, capital stock and purposes of this corporation are set forth in the articles of incorporation, which are referred to as a part of these By-Laws.

Sec. 2. The directors of this corporation shall be five in number, who shall be elected annually, and shall serve until their successors are elected and qualified. They shall qualify as directors within five days after their election, and within ten days thereafter they shall elect from their number a president, vice-president and secretary. They shall also choose a treasurer, who shall be required to give bonds, with surety, in such sums as they may deem ample. They may choose a bank as treasurer without bonds.

Sec. 3. The directors shall have power to levy and collect assessments on the capital stock, the same to become delinquent in thirty days from date of notice in local paper of such assessment. The directors may sell such delinquent stock at public auction to the highest bidder for cash, first giving thirty days'

notice of such sale in a local newspaper, such sale to be made at the door of the office of the Union, in Hood River, Oregon.

Sec. 4. The directors shall employ such agents and other employes as are necessary to do the business of the corporation, and shall fix the remuneration.

Sec. 5. The directors may refuse to receive for shipment any fruit not considered prime for any cause. They may also refuse to receive fruit for shipment from any person who has not shipped with the Union regularly heretofore during the shipping season for such fruit, when in their judgment the receiving and shipment of the same would be detrimental to the interests of the regular shippers of the Union.

Sec. 6. The duties of the secretary shall be to keep all books and accounts and records of the corporation, and to keep the minutes of the proceedings of the directors' and stockholders' meetings, and to carry on all correspondence, and to perform such other duties as may be required by the board of directors.

Sec. 7. The duties of the president and vice-president shall be the same as are usually required of such officers.

Sec. 8. It shall be the duty of the treasurer to receive and pay out all funds of the corporation, and to keep a correct account of the same.

Sec. 9. The annual meeting for the election of officers and the transaction of other business of the corporation shall be held on the second Saturday in November of each year, in the town of Hood River, Oregon, at 10 o'clock a. m.

Sec. 10. The president shall instruct the secretary to call a meeting of the stockholders whenever in his judgment the necessities of the Union require it, by giving one week's notice through the local newspaper and by posting notices in three conspicuous places.

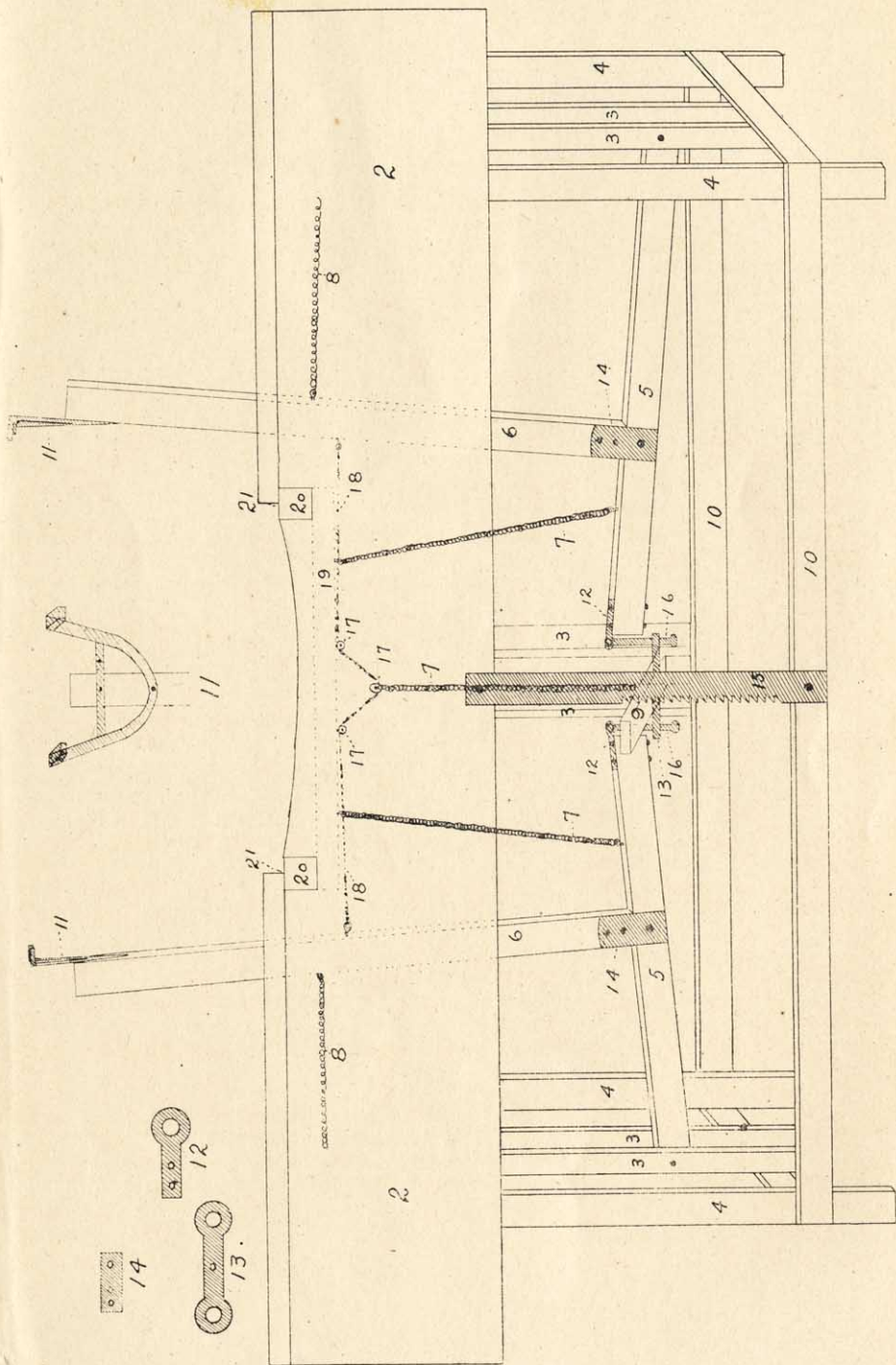
Sec. 11. A majority of the stock subscribed, upon which all legal calls or assessments are paid in full, shall constitute a quorum at any stockholders' meeting, and no vote shall be counted which is not represented by at least one share of stock upon which all calls or assessments have been paid.

Sec. 12. These By-Laws may be amended by vote of a majority of the stock upon which all calls or assessments have been paid in full, at any regular or called meeting, provided that notice to amend By-Laws shall have been given in the call for the meeting.

Sec. 13. The board of directors shall have the power to fill any vacancies that may occur in their number.

KEY TO PLAN FOR NAILING PRESS.

1. Cover boards to table, extending about half over cross pieces (20) on each side. Length of table, 64 inches.
 2. Side board to table. The part between the cross pieces (20) is cut down to allow a box with bulged bottom to slide off the press.
 3. Uprights for attachment of levers (5 and 9).
 4. Legs of table, $28\frac{1}{2}$ in. long, $1\frac{1}{2}$ in. square. (All the arms, legs, and levers of the press may be made of $1\frac{1}{2} \times 1\frac{1}{2}$ in. stuff.)
 5. Levers, 24 in. long.
 6. Upright arms, 30 in. long.
 7. Steel springs, $\frac{3}{8}$ in. inside diameter. The two attached to the levers (5) are fastened at upper end to spanner (19). The center spring is attached to the foot lever (9) and a pulley (17). All springs are shown relaxed.
 8. Spring attached to upright arm (6) and support (3). These springs should be long and light, such as are often used on screen doors.
 9. Foot lever, bolted to uprights (3) at back, and working with catch plate and ratchet in front. It is fastened to plate (13).
 10. Brace for legs and lower support for uprights. Three inches from ground.
 11. Horseshoe plate for gripping box cleats and cover. It is attached to arm (6) with flat-headed stove bolts, and must be made very true.
 12. Iron plates bolted to levers (5), with large holes in projecting ends, allowing the bolts (16) to slide freely.
 13. Lower plate under lever (9), to which it is bolted loosely, with large holes in each end for free play of bolts (16).
 14. Side plate joining lever (9) and arm (6). Two bolts to arm, and one, fitted loosely, to lever.
 15. Iron ratchet to engage plate on front lever (9).
 16. Half-inch bolts, $2\frac{1}{2}$ in. long, working loosely in the holes in the plates in the plates (12 and 13).
 17. Three small pulleys for rope attached to arms (6). Center pulley is attached to center spring (9). The other two pulleys are attached to spanner (19).
 18. Strong quarter-inch cord that will not stretch. Runs across from arm to arm (6), passing through the three pulleys (17).
 19. Spanner running parallel with side, back about 10 in. from front side and directly under center of box.
 20. Cross pieces (end view), providing support for box. Attached to it is spanner (19).
 21. Grooves for holding box in place. They are a trifle over 18 in. apart. To accommodate the special box, which is 20 in. long, strips may be nailed to the table top one inch back from the opening on either side.
- The top of the table must have slots cut in it to allow working of arms. Tables may be of any width desired, but arms should be conveniently near the front.



Scale $\frac{1}{4}'' = 1''$