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The Pre-Cooling of Fruit

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THE beneficial results of pre-cooling fruit, especially for long-distance shipment, are now so generally admitted and understood that very little needs to be said on that point. For early quick-ripening apples and tender fruits, the importance of having the temperature quickly reduced after the fruit is picked and packed, cannot be over-estimated. If warm fruit is loaded into an ordinary refrigerator car, it is several days before the temperature is brought down to the minimum, no matter how much ice is used. For that reason, the fruit must be picked in a green condition and before it has reached its full quality, to allow for the ripening in transit.

J. A. Ruddick

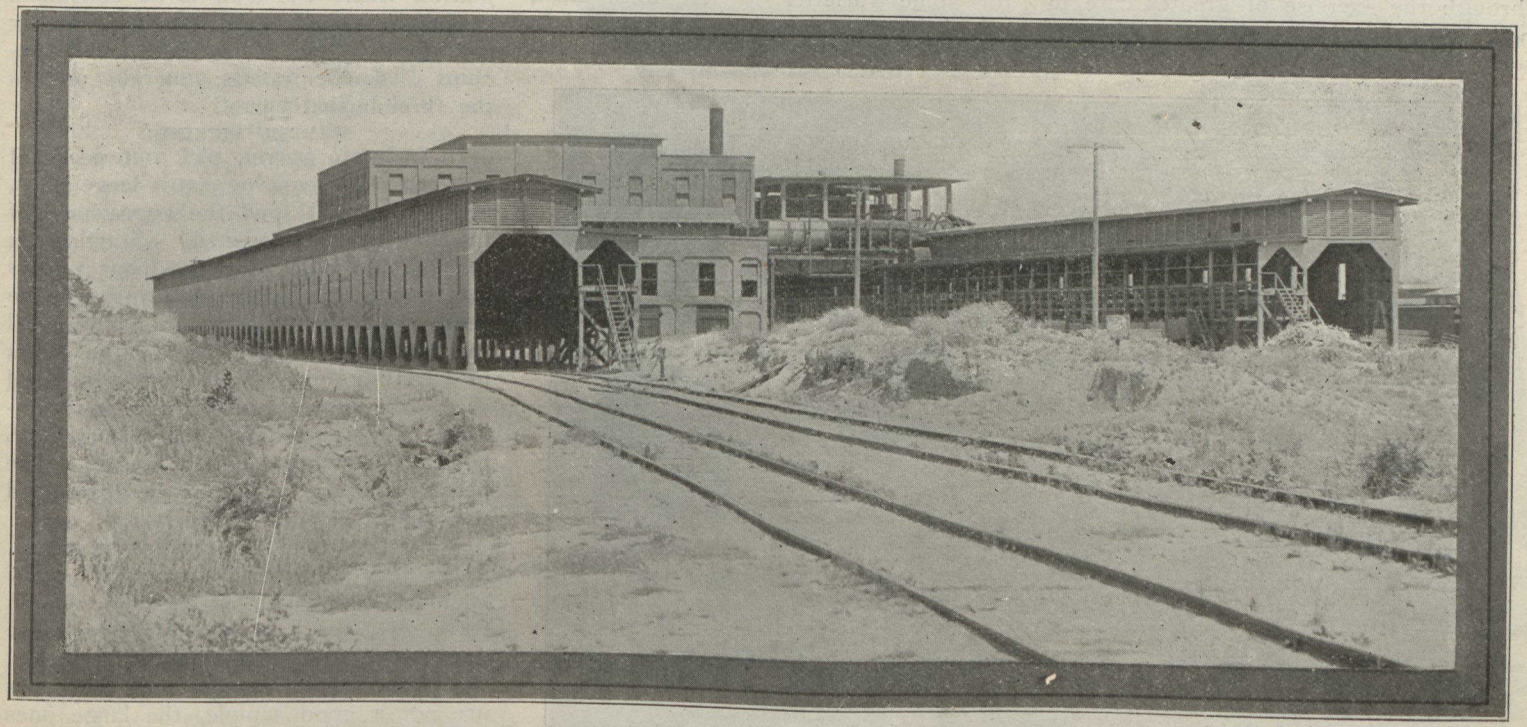
Even though the fruit may arrive at its destination in a sound condition, the quality will not be as good as it would have been if it had been allowed to have become more mature before picking. No matter how green certain fruits may be harvested, the distance which they can be shipped in iced cars without pre-cooling is very limited, if they are to arrive in perfect condition. Pre-cooling increases the distance for safe shipment, and thus extends the market enormously.

The term "pre-cooling" has been somewhat erroneously applied almost exclusively to the method worked out in California for the cooling of loaded cars of fruit and vegetables. Strictly speaking, pre-cooling includes any method of cooling or chilling before shipment, and while there are two or three large car cooling plants in California, there are some half-dozen smaller plants where the pre-cooling is carried out in the packing house. There is no difference in principle, or in the results obtained, other factors being equal, between car-cooling and cooling in a warehouse, but cooling in cars has some decided advantages over the other method, where the conditions permit of its being adopted, or the volume of the shipments warrant the necessary expenditure.

The pre-cooling of fruit in cars is carried out in the following manner. As soon as the cars are loaded, or at least as soon as possible after loading, they are brought to the refrigerating plant and connected to the system with flexible ducts which provide for the passing of a current of cold air through the car. The duct which carries the inlet, or cold blast, is attached to a false door which exactly fits the open door of the car, as is shown in the illustration on page 206. The outlets, or suction ducts, are fitted in the same manner into one of the hatches of the ice bunker at each end of the car. Fans are used on both the inlet and the returns to promote a rapid circulation of the cold air. Canvas baffles are hung temporarily in the car to deflect the air current so as to force it between the packages of fruit instead of passing merely over the surface.

The number of cars which may be cooled simultaneously is limited only by the capacity of the refrigerating plant and the number of connections. The refrigeration required per car is equal to about twelve tons of refrigeration for twenty-four hours; that is to say, if five cars are to be cooled at once, and within a reasonable limit of time, it would require a refrigerator plant of a capacity of sixty tons of refrigeration in twenty-four hours.

With sufficient refrigerating power, cars should be well cooled in four or five hours, including the time required for



A Large Pre-cooling Plant in California Where Twenty-four Cars Can Be Cooled at the Same Time