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The Cold Storage of Apples and Other Fruits*

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ANYONE who has followed the matter closely, must be convinced that there is a fine opportunity to improve the fruit trade of Ontario by the intelligent employment of cold storage and refrigeration in transit. I could quote many instances where the value of apples stored or shipped in cold storage has been greatly enhanced. As an instance, a sales catalogue from Glasgow of recent date, shows that cold storage Kings ex- S. S. "Pretorian," fetched thirty-one shillings, while the highest price paid that day for the same variety shipped as ordinary cargo in the same steamer was twenty-four shillings and six pence. Other varieties show similar differences: Wealthys in cold storage sold for twenty-four shillings, as compared with fourteen shillings and six pence for those carried as ordinary cargo, and so on. I quote these figures merely to indicate the possibilities of shipping early apples in cold storage and not as an attempt to prove that such results could always be obtained.

As fruit growers, rather than shippers, you are more interested in cold storage on land, and I shall confine myself to that phase of the question and get as near to the orchard as possible, for that is where cold storage will be the most effective. There are, however, some things which cold storage will not do and it is just as well that we should have at the beginning a clear understanding of its limitations as well as its possibilities. Reference has frequently been made to the large quantities of apples which are wasted every year in Ontario orchards, especially when there is a heavy crop, and it has been urged that if cold storage were available, all this enormous loss would be avoided. I need hardly say to experienced fruit growers, that such an assumption is an absolute fallacy; that it is not cold storage which is needed primarily, but better orchard methods and management. The fruit grower who depends on cold storage to preserve windfalls, worm-eaten, bruised and skin punctured ap-

ples from early decay, will be grievously disappointed.

The lowest temperature which it is possible to employ does not absolutely stop either the life processes of the apple or all of those destructive changes which include various forms of rot, etc. It only checks them, but some forms of decay are checked more effectively than others. Experiments at Geneva showed that pink rot, black rot and bitter rot developed very little in cold storage,

but that the ordinary soft rot, which is due to the growth of the common blue mould (*Penicillium glaucum*) and which is probably the most common form of apple decay is not prevented to any marked extent. Fortunately, the apple resists the attacks of this mould, unless there has been some puncture or weakening of the skin due to fungus or bruising, until it begins to deteriorate with old age. The injury need only be of the slightest character—a mere pin prick, for instance—to provide an open door for the entrance of the spores of the destroying mould.

If you place over-mature or ripe apples in cold storage, they are bound to go down in a short time. Let me here digress to make myself clear on the two terms, "maturity" and "ripeness." I would call an apple mature when it is fully grown and well colored for the variety, and call it ripe when it reaches its best condition for eating. The length of time which elapses between maturity and ripeness varies greatly according to variety. In some earlier or quick ripening varieties, it is only a matter of days, while in others, it becomes a question of weeks and even months.

The foregoing is probably more of a practical definition than a scientific one, for I suppose nature intends all apples to ripen fully on the trees, but man with his perverseness has so shifted things around that he is growing many varieties in latitudes and climates where they cannot possibly do so. I do not say there is anything wrong in that. We call such apples mature when they reach the stage in which we are accustomed to find them as taken from the tree.

EARLY VARIETIES SHOULD NOT BE HELD
The earliest varieties should be rushed to the market as quickly as possible to take advantage of the early trade. Prompt chilling before shipment is all that cold storage should be expected to do for apples of this class. Even with varieties whose qualities would commend them in competition with others past their regular season, some caution is necessary, because if an apple is carried much past the time when experience has taught every one that it has reached its best and may be expected to "go down", dealers would hesitate before handling it.

Read and Heed

THE CANADIAN HORTICULTURIST is a splendid publication ably edited and artistic and attractive in make up. I would urge all the horticultural societies in Ontario to subscribe for this magazine for all their members. It gives the best value for the money. Some horticultural societies do not subscribe for any horticultural publication. Others are taking foreign periodicals. THE CANADIAN HORTICULTURIST is needed in Canada. It is the only horticultural publication of the kind in the Dominion. Were it not for the fact that thirty-five or forty horticultural societies now subscribe for THE CANADIAN HORTICULTURIST for all their members, it could not be published and Canada would be without a horticultural magazine. Our societies should look at this matter not only from a local standpoint but from a national standpoint as well and be willing to lend a helping hand to a publication that is working vigorously and courageously in the interests of all the societies. Remember that the field in Canada is restricted. In the United States it is practically unlimited. Let us stand by and support THE CANADIAN HORTICULTURIST if we are in favor of Canada for Canadians.—Major H. J. Snelgrove, Cobourg, Ont., in his presidential address before the Ontario Horticultural Association at its recent convention.

*Extract from a paper read at the convention of the Ontario Fruit Growers' Association in Toronto last month. This will be followed in next issue by Mr. Ruddick's remarks on the pre-cooling of fruit and on the construction of cold storage warehouses and cooling rooms.