vegetative growth. It has been found by Roberts[1] that the fruiting habit of cherry trees is directly related to the amount of annual growth made the previous season. If the annual growth is short, that is, under 6 inches, the lateral buds will be mostly blossom buds, and a lateral fruiting system results since there are few leaf buds to make spurs. On the other hand, if the annual growth is long, that is, over 12-14 inches, the lateral buds will be mostly leaf buds with a consequent spur fruiting system. The variety modifies the above figures slightly, since the Montmorency is found to have more leaf buds per given length of growth than the Early Richmond variety. The season, age of tree and part of tree are also considered as factors affecting the ratio between length of growth and blossom bud formation.

The spur fruiting system is recommended by Roberts as the better fruiting system, because of the greater hardiness of spur buds, and the possibility of production for more than one season on the same spur.

FRUITING HABIT OF PLUMS

European and American plums produce blossom buds laterally on one-year wood, and on spurs borne on two-year wood. The lateral blossom buds occur either singly with a leaf bud or in a group with one leaf bud between two or more blossom buds. The spur blossom buds are formed laterally along a short spur. The spur has no true terminal bud, but sometimes the "end bud" of the spur continues in vegetative growth. If no vegetative growth is made the spur dies after fruiting and becomes a short stiff spine.

Japanese varieties of plums produce blossom buds largely as lateral buds.

MARKETING OF WISCONSIN APPLES

M. B. GOFF, Sturgeon Bay.

I have no idea of discussing this question entirely as related to the technique of marketing methods. The past reports of the Society show able discussion of many of the factors of handling

[1]Roberts, R. H.—"Prune the Cherry Tree." Wis. Agr. Exp. Sta. Bulletin 298, 1918.

our Wisconsin apples, and those do not need to be repeated in detail now. I shall deliberately propose some ideas which will run just as counter to the opinion of many of you here as they do to the ideas of many of our fruit men at Sturgeon Bay. I want you to bring out your viewpoint in the discussion that I hope will follow. The function of this Society as an assistant to the successful marketing efforts of the fruit growers of the state is a vital part of thoughts on this question. What I want to say on this matter is largely my own viewpoint, and does not necessarily represent such opinion as has been crystalized on the subject in my own community.

The market for Wisconsin apples is not yet developed. Alternate years of shortage and surplus are reflected in the returns received by the growers. Either our fall and early winter apples meet a good demand in Milwaukee, Chicago, Minneapolis, and the few larger cities of the state, or they do not. We have, as growers, largely accepted the result, pocketed our winnings, or paid our losses, as the case may have been, and waited hopefully for another season. *It takes a jolt* sometimes to produce results, other than those to which we have been accustomed. We received just such a sudden shakeup at Sturgeon Bay the past year in the form of a disastrous hail storm just as we were ready to market our Wealthies. When we sat down in conference the afternoon following this disaster, not one of our growers who was badly affected by the storm had any hope that the crop would find any outlet but the cider mill. That the commission trade could not use what we had we knew all too well. *What we did* was what anyone else would have done under the circumstances —*looked for new markets.*

We used the *bulk car,* the *bushel basket,* the utmost care with our sorting machine, and marketed nearly twenty cars of fruit, that for the most part was not fit for barreling, to absolutely new trade, the farmers and country towns of Wisconsin. We used the cities on about a dozen cars more, but of high grade offerings, of better average than we have ever sold before, but the rural communities saved our lives. Two-thirds of the population of this state, in round numbers, lives in cities under *25,000* and rural districts. So far most of our commercial Wisconsin crop has gone to the centers of population where it has come in contact with the surplus of every other growing territory in the country.

The commission trade has not appreciably developed the consuming powers of our country districts for fruit, because it has been able to make a living without doing so. *If Wisconsin people* are to eat Wisconsin apples, *you and I as fruit growers will have to bring them to it.* Not only are the rural communities good customers, but they are scarcely as critical of the goods they receive, as are the city merchants. The rural trade wants a good honest pack, whether it be bushel baskets, barrels, or bulk cars, but *it is not willing to pay the added price* for the highest grades we produce. Exclusive of the fancy grades, country people will pay more for our apples than anyone else on earth. Even the past year when every man who owned an apple tree had a harvest, northern and western Wisconsin would have consumed infinitely more apples than were produced commercially all told in Wisconsin. Outside of the state, northern Minnesota, and northern Michigan are within reach of us on the basis of freight rates, and offer wonderful opportunities.

The advantage of this territory should be plain enough. Freight rates, high as they are at present, makes it suicide to ship farther than necessary to find a market. The difficulty of dealing with firms at a distance makes it necessary to use only the highest rated houses. Otherwise any contest over the acceptance of a car, or an arrival in bad order, is costly. From the selling standpoint, many of the best paying customers, and those which are most energetic in pushing goods, are among those firms whose financial standing is modest, or whose experience in business has not been long enough to entitle them to a high credit standing. Selling in such a limited territory as our own state, it is possible to accept many orders which would be absolutely out of the question in distant territory. Even though a controversy does come, an efficient traffic service will locate the cars promptly enough to allow diversion without loss or spoilage, and whenever necessary any of these places can be reached in a dozen hours by train or automobile. Moreover, through such a restricted territory it is possible for a salesman to so develop his personal acquaintance with the trade that he is able to work with the highest efficiency. In handling this kind of trade, the delivered sale becomes a necessity due to the unfamiliarity of the average consignee with railroad matters, and due to his unwillingness to accept the risk. But on a delivered basis more money can be

asked by the seller, and when the cost of carrying the risk of delivery is concerned, the seller if equipped with any sort of traffic assistance, is well paid for his extra hazard. If a hail storm had to come to Sturgeon Bay, we are glad that it came this year, not only because apples were cheap, but because in seasons of scarcity we would probably not have dug up the business that developed. As a result, "Wisconsin Apples for Wisconsin" is no unworked slogan for us; we believe in it because it means money in our pockets.

Another problem of marketing that has received little attention in Wisconsin is the provision for cold storage. We have said, as one of the talking points for our varieties, that we did not require storage, and that on this account these expensive additions to our equipment were unnecessary. I am consequently aware that my advocacy of reasonable cold storage facilities at the point of origin of our Wisconsin apples will meet with considerable objection. I am not proposing the methods by which such storages can be built, nor am I saying that they should be owned by growers or be public warehouses. I think they should be located close to the shipping point, and wherever possible in connection with a growers' packing station. To be commercially profitable they must of course be supplied with cheese or other products in sufficient volume to make the charge on apples reasonable. They cannot be erected at a profit in this state primarily for apples. But why cold storage for fall varieties? you may ask. It is a good question indeed. The answer is not found at the shipping point, but in the consumer's cellar, or in the retailer's store. Our Wisconsin apples I believe it is conceded are juicier and softer than those of the Pacific coast. They are on that account poorer keepers, and less adaptable to long hauls, and long holding. Weather conditions at picking time frequently induce the maxim of shrinkage and decay before shipment occurs. Delays in packing, sometimes inevitable in the hauling of a large crop, are serious interferences with keeping quality. Often the market conditions make a delay of a few days before shipment almost a necessity. Shortage of cars, inability to get refrigerators for special orders, temporary market slumps all act to prevent prompt shipment. I know it is said that apples should not stand at all before packing. With this sentiment I thoroughly agree. Neither should fruit remain in barrels any appreciable

time before loading on cars. Of this I am thoroughly aware. Likewise the best market at the moment is supposed to be better with our varieties, than a better market later which entails delay. It is just because I admit all of these contentions, and because I realize the human impossibility of doing the work as it should be done, that I am an advocate of cold storage. Naturally what I am saying relates to the carlot shipper. But if anyone here who depends on a distant market is not a carlot shipper, he had better become one quickly. If the spirit of co-operation is not strongly enough developed in his region to bring carlots together in his territory, he had better call on this Society and on his own initiative, to bring that about.

With cold storage comes the use of refrigerator cars. It is precisely because I feel that refrigerators are used far too little in the shipment of our fall apples, that I am more than ever an advocate of local storage. A dollar a barrel added to the price of Wealthies, and later varieties, through the use of cold storage and refrigerator cars would be a good investment. The amount of heat developed in a box car of apples, even during the latter part of the fall when the nights are below the freezing point, is far greater than one would imagine. The direct rays of the sun on the sides of the cars all day long heat up the interior to such an extent that a cold night can scarcely lower the temperature of the apples before morning. I am satisfied that delays of handling soon after picking have comparatively greater effect on the keeping and merchantable qualities of apples than delays later on. Every bruise developed during picking and packing is made doubly worse by a warm temperature. To use storage in the ideal way on our apples I would proceed in the following manner. I would devote all of the energy possible to handling the apples rapidly until they were packed in barrels. Then I would ship them immediately in refrigerators if the market were right, or would put them into the cold storage without delay. Once in cold storage I would handle them at my convenience, aiming to play the market, in the best possible manner. But in shipping out I would use iced cars long after this precaution would ordinarily be thought unnecessary. On such varieties as Wealthy, McIntosh, Snow, Northwestern Greening, and our other varieties of the same period, this method of handling would not only reduce the hurry at packing time and allow most effort to be put on

the packing where it belongs, but it would go far to stabilize the market through the reduction of spoilage and the consequent risks involved to the trade. As a means of winning our place irrevocably with the city markets nearby, nothing better could be devised. As a means of broadening our shipping radius to St. Louis, Cincinnati, and the far Dakotas this method is almost necessary, unless an ample supply of refrigerators is available. Even with early varieties like Duchess, cold storage facilities would sometimes save severe losses. The answer to the objector on this score is that the commission man frequently uses the cooler on these very varieties to save himself from loss. I am going to leave the balance of this cold storage discussion for you.

I do not wish to say much about packages in this discussion. I am not one of the men who believes that the day of the barrel is past, nor have I become an enthusiast for the bushel basket. The trouble with the bushel basket as it is at present used, is that it is a receptacle for fruit that never ought to go into bushels at all. I believe that if the bushel is to be used in the future with anything like the frequency with which it was used this year, it must be surrounded by the same set of legal requirements with which the barrel is guarded. Then an adequate inspection must be maintained. I trust that we may have a resolution passed at this meeting for this very thing. If the Wisconsin Apple Grading Law is to amount to anything for the commercial growers of the state it must be adequately enforced. Otherwise the confidence of the public in Wisconsin apples will remain at low ebb. The public does not discriminate between the quality of apples that are allowed to go into baskets, and those which are supposed to go into barrels. A bad basket leads the consumer to expect a bad barrel. But the packing that is done by the growers themeslves in bushels is scarcely as damaging to the public confidence as that done by the carlot distributors who buy in bulk, and sell in baskets. I am heartily in favor of the bulk car as a carrier of a certain class of apples, which are not of the average grade that it pays to barrel, but are far above the grade of culls and cider stock. But if we as commercial men are to arrive in the consumer's esteem within the next generation, we must prevent the middle man from doing what we ourselves do not dare to do with our packages.

Much attention has been given to the box for years in this Society. Many of you remember the joint debate that we had on the subject between Mr. Kern and Mr. Palmer. The question is still under debate, and will continue to be as long as these packages exist. The Colorado face and fill pack has some advocates in Wisconsin. Our good friend Mr. Jones of the Marketing Division feels that a consumer's size package, which can be sold at a price that will induce consumption, ought to be increasingly popular in this state. A face and fill box pack meets this requirement. My own feeling is that we have not yet exhausted the possibilities of the barrel. But I do feel that we ought to give the sized and wrapped box a thorough trial on McIntosh, wherever good color is secured, and even the early fall Dudley offers box possibilities. There is a time during seasons, just before the Jonathans make their appearance from southern Illinois, when the market is bare of good eating apples. This year about the only thing in evidence during this time was the California Gravenstein, and this variety brought as high prices as four dollars and a half to five dollars on commission men's sales to retailers. Our Dudley handled in iced cars would arrive in better condition than the Gravensteins, and if packed with equal skill, could without question bring similar prices. The Dudley has a texture and appearance, coupled with good size that should lend itself to this method of marketing. I can see our Secretary shaking his head at this suggestion, but he can have his turn later.

It is on the rigidity with which we should insist on grading standards that some of the bitterest fights are waged. We have in our own central packing house association just such battles. The good men of both opinions find more difficulty in getting together on this point than on any other. In western New York it is the rock upon which almost hopeless disagreement is breaking. Whether we shall pack at a minimum of cost, and thereby ship a grade which will compete on a par with the potato grading methods used in many other places; or whether we shall set out to make a name for ourselves which will be a foundation for good selling methods, is the point at issue. Little salesmanship can be applied to an ordinary mediocre quality article. No premium over the general markets can be obtained for it. No consumer's demand can be built up about it, and in years of bountiful

crops it must go for the figures which an overstocked market will pay. The commission man who buys that grade of goods is not deceived by it. He pays what he thinks it is worth. The only man who is fooled by such a pack is the grower who thinks that he is taking the short road to success. I do not deny that at times it may be possible to get as much or more money, when the cost of the packing and selling is concerned, for the medium value goods, than can be netted from the high quality product, but that will not often occur after a brand has made its own high reputation. There is only one field in the apple business of today in which the competition is not so strong as to wipe out most of the profits. That is the field of the high quality product. The consumers of this country will begin to consume apples freely when they can get good ones all of the time. If the housewife is charged an exorbitant price for poor apples, she is willing to forego the pleasure of getting good ones at about the same figure. For some reason the retailer differentiates very little between the prices he charges for good and fair grades. The only way to bring apples into consumption is to bring both the consumer and the retailer to a realization of the possibilities of well packed apples. This requires a selling system that will include the retailer in its educational program, and such a system cannot be built up about a poor product. Whether the apples are to be used for cooking or desert purposes, the same rule applies. A rigid standard of grading as regards blemishes and bruises and a standard for color proper for the purpose for which the product is intended, is the only road to progress in the apple business.

After all, the apple problems we have been meeting have been largely local. Until the fruit is in the package and on its way to market the broader relations of marketing do not begin to operate. In Wisconsin we have allowed the handling of our apples to be entirely local, and while the volume of commercial shipments from the different commercial sections has been small at best, the time is fast approaching when our products will meet each other in the same commission streets. The acreage of bearing orchards is rapidly increasing, and the next few years will see the yield quadrupled. Wise forethought would have us prepare now for the time when we shall need to know each other better. If there are any problems of general importance to the apple men of the state, we had better look to their solution. I

believe that the time is upon us now for concerted action. A certain amount of inter-county activity is warranted. We in the Sturgeon Bay area have held to a policy of proud self-sufficient isolation, and have, if the truth were known, pursued the methods of the conceited school boy. Perhaps you in other regions have been similarly guilty. Good judgment, however, would bring us into counsel on some of the related commercial phases of our business.

One of these questions is the package cost. Probably all of you except the Sturgeon Bay men cheerfully paid your dollar and a half for barrels last fall. Doubtless some of you buy your spray materials at retail prices, feeling as you do, so that you owe some poor dealer a living. While I will not deny that you do, I do deny that you owe it to the average dealer on such wholesale items as spray materials and packages. It would not be much of a trick to set up a Wisconsin Fruit Growers' Cooperage Company. Its details could be worked out very easily. Coopers are plentiful enough, and the Lord knows they are talkative enough, to make it possible to run a shop of our own. Ten thousand barrels or multiples thereof are most convenient sized units to manufacture. The freight rates on slack cooperage are so infinitely cheaper than those on madeup barrels, that a shop properly located should pay us good dividends, and should relieve us of the necessity of depending on others for barrels. Likewise the bushel basket is one of the most easily made containers from the manufacturing standpoint. Quantity contracts on these containers can not fail to give us advantages. The L. C. L. purchase prices for baskets add a real tax upon our business. In the matter of spray materials large volume purchasing has a very distinct advantage. The various companies are working hard to get association business, and care very little for small orders upon which they levy sufficient profits to pay all of the selling expense attendant to small volumes. I am not necessarily suggesting that we establish a Fruit Growers' Supply Company at the present time. But I am suggesting that something may be accomplished through agreements between us. Probably in the Sturgeon Bay region our larger volume of some of these articles makes us less dependent on this kind of cooperation. If so we welcome you to work with us for our mutual advantage.

Many other inter-sectional problems loom up. Almost no work has been done in Wisconsin on railroad rates. If the rates on apples from New York into this territory are fair, then our rates to our primary markets are hopelessly discriminatory. No localized effort is of much avail in the changing of railroad tariffs. It is possible by our combined effort to make the quantity of fruits shipped in Wisconsin look like a regular migration. We can have any reasonable thing that we ask for if we will ask for it unitedly. This whole question of railroad transportation needs careful study from our fruit growing interests. Such action in Michigan is relieving the situation which has allowed Georgia peaches to be shipped to Grand Rapids, Michigan, about as cheaply as Michigan fruits themselves can be shipped there. That many such inequalities can be found in our own state, I do not in the least doubt.

Market information is one of the things that is difficult for all of us to get promptly enough to be of the greatest value during the shipping season. Much market data is available now from many government and private sources. But much remains to be gathered which no one but ourselves can provide. Formerly the action of this Society in co-operation with other agencies outside of the state has attempted to relieve this condition, but this service should be widely extended. We need to know a day or two in advance of our strawberry movements just what is going on in southern Michigan. Year after year we have watched the high southern markets waver and break when an avalanche of Michigan consignments crossed the lake to be dumped on Milwaukee and Chicago. A few days afterward this glut always cleans up, but in the interval we in Wisconsin have our own troubles. To counteract this we ought to have advance information about the supplies of home grown berries, not only in our own state, but in Iowa, and Minnesota. You strawberry men have seen the whole strawberry market fall to the bottom all of the way from Rock County to Lake Superior within one day. Unusual weather conditions have brought on home grown berries through this whole territory at the same moment. But these questions are far broader than the strawberry crop. The interference of the small fruit crops of Iowa and Minnesota is sometimes very great with our cherries, and later with our early apples. To be intelligent shippers we should know about these things

sufficiently far in advance to plan our policy. In some years the knowledge of these factors in Sturgeon Bay would have given us a dime or more per crate in addition to our cherry price. Undoubtedly we can afford to gather this information in Door County for our own personal advantage, but the matter really affects the policy of us all, and should be treated as an intersectional problem.

It is perfectly logical for those of us in the fruit business to look to this Society as an aid in a constructive program for the betterment of the commercial fruit growing interests. I would not have you think that I do not appreciate the really great work which the Society has already done, in countless ways, for the advertisement and enhancement of our interests, but I do believe that if we among the commercial men will formulate our demands that the Society can meet them in a perfectly adequate way. I am not blind to the questions of public policy involved in having a state aided organization function as a private trade body, nor do I think that we as fruit men have any right to ask the state to finance our trade activities any more than the manufacturers of Milwaukee have to ask the legislature to maintain their organization. I do feel, however, that many of the questions which this organization should handle for the fruit growers are broadly enough in the public interest to justify the expenditure of state appropriations. Our trial orchard work is gradually relieving the necessity for the larger expenditure of past years, and a wise use of our funds would compel us to perform additional constructive work if we are increasingly to justify the confidence that the state has imposed in us. It is in the peculiarly horticultural phases of crop data, facts regarding materials used in fruit growing, legislation affecting fruit growing progress, and many kindred subjects that the society can be useful, and make a justifiable use of state appropriations. None of these activities needs to overlap with the work of existing state departments, but should on the contrary reinforce and assist their activities. The peculiarly horticultural phases of our industry which do not fall within the field of the College of Agriculture, or the Department of Markets, belong to us. In due respect to the other problems which these other agencies must face, they cannot give consideration to many of the questions to which we want a solution.

As a concrete suggestion, I believe that there should be a commercial fruit growing section organized within this Society. It should undertake to act as a trade association for Wisconsin fruit growing interests. It should under the guidance of the Society and its Secretary work out questions of market data in complete co-operation with the existing statistical bureaus of the state. It should stimulate co-operative business activity of fruit growers, but should not itself enter this field. It should not request an undue share of the Society's funds, and should remember that there are other horticultural interests within the state that are not primarily related to commercial fruit growing. Whenever the activities of this commercial section pass beyond the borders of those which are legitimately supported by state appropriations, the private resources of the industry should provide the support. In this way, I believe, the fruit growing interests of this state can best work in harmony and in this way the Horticultural Society can best continue its long record of helpful support of the commercial horticultural development of Wisconsin. Without this sort of activity, the problems of marketing our Wisconsin apples must continue to be solved by each locality in its own selfish interests, and when they are thus handled, the advancement of Wisconsin's apple and other fruit crops will fall far short of our ideal. If we are to succeed in these difficult times we must work together for our common good; and in our own field, no better means of stimulation exists than to back up our program through this organization which is ready for the purpose.

SPRAYING APPLES

PAUL E. GRANT, Menomonie.

When I attend a meeting of this kind the thing that I want to find out is, what the other fellow does,—why he does it and the results obtained. I don't care if his conditions are a little different from mine—if I can get these facts I can apply them or adopt them to my own problems.

Assuming that you feel as I do, I will state briefly our spraying plan for this year.