stripes. Where this worm has been troublesome in fields of corn it is inadvisable to use such land for tomatoes the following year. The insect passes the winter in the ground in the pupal state. If, therefore, infested fields are plowed deeply in autumn, many of the earthen cells protecting the pupae will be broken and the latter exposed to frost and other destructive agencies.

SLUGS.

Although these disgusting creatures are, of course, not insects, the entomologist is frequently called upon for a remedy to destroy them. In gardens, tomatoes are a favorite attraction for slugs, which come out of the ground at night and feed upon the ripening tomatoes. These creatures are often particularly abundant on rich land in dampish places. An excellent remedy is to scatter over the surface of the ground, where they occur, freshly slaked lime. This should be done in the evening, and when the slugs come out to feed the lime adheres to their bodies and causes them great inconvenience. By emitting a slimy secretion they are often capable of throwing off the effects of the first application, but two or three applications of the slaked lime on consecutive nights will thoroughly eradicate them.

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The Outlook for the Apple Growers' Industry.

At a recent meeting of the Western New York Horticultural Society, Prof. S. A. Beach, of Ames, Iowa, reviewed the outlook of the apple-growing industry in the United States. The argument is based on United States conditions, but the underlying principles are so like those of the Canadian industry, and the chief factors entering into the situation are so nearly duplicated in this country that the contents of the address cannot fail to be of interest to Canadian fruit growers. The subject is treated under three heads, favorable factors, unfavorable factors, and what the grower can do to improve the situation.

Among the factors which appear encouraging to the apple grower these stand out as importtan: First, the actual decrease in recent years in the number of apple trees growing in some of the most important apple-producing States. This would appear to give a better chance to find good markets for the crops from those trees which remain. Second, the marked decline in the yield of apples per capita for the country as a whole. This also would appear to indicate a better apple market for the future. Third, the constant increase in population from which it is natural to expect a constant, if not a corresponding increase on the total annual consumption of apples. Fourth, the enlargement and improvement of the domestic fruit storage and transportation facilities argues for better distribution and better marketing of the apple crop. Fifth, with the probable extension and a possible better development of the facilities for delivering American apples to foreign markets in good condition, the export trade with Europe may be expected to materially increase. Besides this we look for the apple dealers of this country to be eventually in closer touch with Eastern Asia, from Sibera southward, and with the outlying islands from Japan to the Phillipines; also with Australia and South America. Some of these improvements in the export trade will come in the near future.

In the outlook of the Eastern apple grower, as compared with the growers of the Rocky Mountain and Pacific Coast districts, these factors appear in his favor; cheaper land, cheaper labor, nearness to the great centers of distribution, opportunities for disposing of the lower grades of fruit at remunerative prices, either for direct consumption or for the manufacture of by-products, greater longevity of the trees, superiority of fruit in texture, flavor, quality and keeping qualities as compared with fruit of the same varieties grown in irrigated districts of the North West, but it is generally conceded that the North Western fruit has the advantage in bright color and often in size.

Among the factors which are less favorable for the Eastern apple grower, the following are significant: First, prospects for keener competition with the output of the orchards of the Pacific North West. Under the existing freight rates on apples from the Pacific coast to the Atlantic seabord, which amounts to fifty cents per bushel, it is evident that only the better grades of apples may be expected to find their way to Eastern markets in any considerable quantities. This means that the Eastern growers will feel the competition with the North West most keenly among the lines of the better grades of fruit.

How much the existing situation may be changed after the opening of the Panama Canal remains to be seen, but by reason of the lower ocean freight rates as compared with transcontinental tariff, the north Pacific growers could then offer their apples on Eastern markets at considerably lower prices than must now be maintained in order to return them a fair profit. They would gain a further advantage in competing with eastern apples in foreign markets, because, after once being loaded on shipboard in the Pacific ports, the fruit would not need to be handled again until it reached Europe.

The 1910 census shows a decrease of over 15,000,000 apple trees in the States of New York, Pennsylvania, Ohio and Michigan, which amount is more than the combined numbers of existing trees in Montana, Idaho, Oregon and Washington. It should be remembered, however, that these removed trees in the east and central States represent old, neglected orchards which contributed very few, if any, apples to the market. On the other hand the trees in the northwestern States have been mostly planted for commercial orchards. Many are on the speculative basis and represent the investment of college professors, public school teachers, clerks, clergymen, doctors, lawyers and other urbanites who have bought these properties at an inflated prices. While there are, in the aggregate, thousands of acres of apple orchards under such ownership, which can never have any marked influence on the commercial apple crop of the country, there still remain tens of thousands of other orchards in the Northwest, the crops of which are competing and will continue to compete for the best apple markets at home and abroad.

Another factor not favorable to the Eastern grower is found in the fact that the Western growers are becoming more and more thoroughly organized. As evidence of what is being done in this particular, it may be stated that one organization in the Pacific Northwest handled over 3,000 cars of apples for its growers this season, and the returns were generally satisfactory. Another important factor is the inroad being made into the apple market by the increasing consumption of citrus and sub-tropical fruits. The banana trade, in a few years, has grown from insignificance to an industry representing $15,000,000 in the United States alone. Citrus fruits are consumed to the extent of 100,000 car loads per annum. All these fruits are competing more and more strongly with the apple, not only in our domestic markets but also in the foreign trade.

In addition to all these disadvantages the area upon which apples might be produced is almost unlimited, but competition will finally determine what are to be the great apple orchard districts of the country.

How growers may improve the situation. Prof. Beach dwelt for some time on the remedies which must be applied to the industry in order to restore it to its proper place. Many things demand attention, some of which are orchard management and soil fertility as well as packages, methods of packing, storage, refrigeration and transportation. However, these are not the problems that must receive first consideration, but those which have to do with organization for the purpose of marketing the fruit, of buying supplies, of advertising the goods, and in other ways working for the common interests. If the Eastern grower does not rouse himself to meet the western competition, it will have the effect of crowding his fruit into those channels of trade where the cheaper and less profitable grades are marketed.

One organization in the West passed a bill for 60,000 dollars for advertising this past season. This explains in part their success and what may be done through united efforts, and suggests to the Eastern grower that he carry out the advice of Prof. Beach, and take up in a persistently aggressive way the extension and development of his markets for his brands of fruit. Also standardize the grade and pack for the apples of the region, and offer these standard goods in a supply large enough to develop and hold the best class of trade.

POULTRY.

Prince Edward Island Egg Circles.

Early in July, 1912, W. A. Brown, B. S A., Chief of the Poultry Division of the Live Stock Branch, Department of Agriculture, Ottawa, visited Prince Edward Island to investigate the poultry industry of that province. Mr. Brown stayed in the province for some weeks, visiting the farmers and those who were handling the egg trade in the rural districts, Charlottetown and some of the large towns. In addition to making a very thorough investigation, he delivered addresses at many different points, and this assisted him greatly in that he was able to meet large numbers of farmers and others and familiarize himself, not only with existing conditions, but also with the views of all concerned, and the future outlook. The impression left on his mind was that conditions justified special assistance being given to Prince Edward Island, that reforms in all departments were needed, and that in no part of the Dominion was there a greater future in store for the poultry industry than in this wonderful little province. Mr. Brown, on his return to Ottawa reported acordingly. The result was the appointment of T. A. Benson as Dominion Poultry Representative on the Island. Mr. Benson, who had for some time held the position of assistant district representative for Ontario County under J. H. Hare, B. S. A., whom he assisted to organize the successful Ontario County egg circles, landed on the Island at the end of September, 1912, and with the co-operation of the Provincial Department of Agriculture immediately set about investigating conditions.

The winter was spent in this way, and delivering addresses in the rural section preparatory to organization work. In the spring of 1913 organization of egg circles commenced, and in all, some eighteen egg circles have been organized up to this time, some of them quite recently. These associations have been well spread over the province with a view to demonstration.

So far 581 farmers have been registered as members of one or other of these circles. 381 additional stamps and ink pads for stamping the eggs have been sent out to managers upon their urgent request. 56.473 dozens of eggs have been shipped to the Montreal markets at an average premium over local prices of at least three and one-half cents per dozen after expenses being deducted, and not taking into account an undue inflation of prices by those in strong opposition to the movement.

Quality and new-laidness have been the watchwords of these associations, and deteriorated eggs have been sharply discriminated against. The Brooklyn egg circle sent one shipment of 270 dozens to Montreal, which was described by the buyers as a shipment that any egg circle in the Dominion might well be proud of, it was a record.

The extra profit to the producers is simply due to the elimination of waste and unnecessary handling, as a result of the interest awakened which may be described as almost phenominal. Mr. Benson now has on file in his office applications from 56 different sections of the Island for organization, many of which take the form of demands and these in addition to applications for lecturers.

According to Mr. Benson the credit lies with the farmers of Prince Edward Island whom he describes as far seeing, intelligent and ready to take hold of a fair business proposition.

Incubators and Incubation.

The season is fast approaching when many of our readers will be bringing their incubators into use again. Artificial incubation is not always as simple as it would seem. There are many seemingly small matters in connection with an incubator which, if not properly attended to, result in a lower percentage hatch and much lower vitality in the chicks. The hatch is made or lost usually during the first week of incubation, according to Prof. W. R. Graham, of the Ontario Agricultural College, Guelph, who has recently revised his bulletin on "Farm Poultry," which should be in the home of every poultryman.

He advises that the temperatures should be kept well up to 103 degrees with the thermometer lying on the eggs and, of course, the temperature should be as even as possible. At Guelph, before the eggs are put into the machine the interior is thoroughly washed with a ten per cent. solution made from one of the coal-tar products such as Creoline or Zenoleum. This is applied hot. With the machines the best results have been obtained when water or moisture of some kind was used during the entire hatch. A pan is placed beneath the egg tray nearly the full size of the machine and the bottom of this pan is always kept covered with water or wet sand not more than one inch deep.

In selecting eggs for hatching, always avoid dirty eggs; those which have been washed, and small or very large eggs. There is often something abnormal about an unusually small egg or one over-large. It must be remembered that the shell of eggs is porous, and very often when much dirt adheres to such, it contains diseased germs which may gain access to other eggs in close proximity to it in the tray. Another point that Prof. Graham emphasizes is that when turning the eggs the attendant should always be particular to do so with clean hands, particular care being necessary not to handle the eggs when kerosene or other greasy material is present on the hands.

"The room in which the machine is operated should be clean and well ventilated. If possible, select a room that varies but little in temperature. Where there is a strong odor of lamp fumes or where there are decaying vegetables or where molds grow upon bits of boards or upon the walls, an incubator will not usually do good work. The lamp burns brighter, the eggs hatch better and chicks have more vitality when the air in the incubator room is pure."