MASSACHUSETTS

CROP REPORT.

19

1906.

Home garden.

Dairy profits.

Clover.

Poultry feeding.

Cranberry growing.

Peach culture.

SERIES OF 1906. VOL. 19. NO. 1.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF MAY, 1906.

THE HOME GARDEN.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

APPROVED BY
THE STATE BOARD OF PUBLICATION.

Crop Report for the Month of May, 1906.

Office of State Board of Agriculture,
Boston, Mass., June 1, 1906.

We present herewith Bulletin No. 1, Crop Report for the month of May, the first monthly crop bulletin for the year. In the past, these bulletins have included statistics in regard to the crop conditions of the country, weather conditions in New England and elsewhere in the United States, a summary of the crop conditions in the State, at the time of making returns each month, compiled in this office from the reports of our correspondents, selected reports of correspondents, and an article on some subject of interest to farmers at the close of each bulletin. This plan will be substantially followed during the present season. Suggestions for improvement will be welcomed from all interested. The article for the present issue is on "The Home Garden," by Prof. Frank Wm. Rane, professor of horticulture at the New Hampshire College of Agriculture and Mechanic Arts.

The garden is a subject of vital interest to many, and should be to all, for if the old adage that "Economy is wealth" be true, it is equally true that there is no greater money-saver, either on the farm or in the suburban home, than a well-managed and productive garden.

Progress of the Season.

The May returns of the Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture (Crop Reporter for May, 1906) show the area under winter wheat remaining in cultivation May 1 to have been about 29,623,000 acres, 6 per cent less than the area sown last fall, and 1 per cent less than the area harvested last year. The average condition of the growing winter-wheat crop on May 1 was 91, as compared with 89 on April

1, 92 on May 1, 1905, 76 on May 1, 1904, and 85, the mean of the May averages for the last ten years.

The average condition of winter rye on May 1 was 93, as compared with 91 on April 1, 94 on May 1, 1905, 81 on May 1, 1904, and 89, the mean of the May averages of the last ten years.

The average condition of meadow mowing lands on May 1 was 92, against 93 on May 1, 1905, 85 on May 1, 1904, and 90, the mean of the May averages of the last ten years.

The average condition of spring pastures on May 1 was 91, against 92 on May 1, 1905, 80 on May 1, 1904, and 89, the mean of the May averages of the last ten years.

Of total acreage of spring plowing contemplated, 64 per cent is reported as actually done up to May 1, as compared with 72 per cent at the corresponding date last year and a ten-year average on May 1 of 67.

Of spring planting, 53 per cent is reported as having been completed on May 1.

In Massachusetts the average condition of winter rye was given as 89; the average condition of meadow mowing lands as 94; the average condition of spring pasture as 92; the percentage of spring plowing actually done as 42; and the proportion of spring planting done as 15.

Weather Summary, Jan. 1 to May 1, 1906.

[Furnished by Weather Bureau, Boston.]

The weather of January was generally unseasonable, the storms being of much less intensity than those usual for the month, and fewer in number. The temperature showed a marked departure from the normal, ranging high throughout the month, with an average daily excess of nearly 8 degrees. The maxima over the State from the 21st to the 24th, and the mean for the month, were the highest ever recorded for January. The mild weather caused buds to start on some trees. Ice disappeared from many streams and its thickness was greatly diminished on ponds. The greater part of the precipitation occurred as rain, and was fairly well distributed over the month. The snowfall was light, and at the close of the month there was little on the ground and the soil in many localities was free from frost.

February weather was less severe than the normal. The month opened with generally lower temperatures, the mercury falling to or below zero on the 3d and 6th. The ground remained bare of snow until the 9th, when there was a general and quite heavy snowfall, except on the immediate coast, where rain fell. The month closed with a storm of moderate energy, both rain and snow falling, followed by a decided fall in temperature, and high winds and gales on the 27th and 28th.

March was unseasonably cold as a whole, the temperature ranging at or near zero to an unusually late date, and the mean for the month being 3 to 5 degrees below the monthly normal. The snowfall was greatly in excess of the March average, generally exceeding the fall of the three months preceding. Heavy gales and storms caused great damage to shipping on the coast, with considerable loss of life. After the 26th the temperature was decidedly higher, and with rains during the closing days the snow rapidly disappeared, so that at the end of the month the ground was generally bare.

April was a seasonable month, no marked departures from the normals occurring in any of the elements. During the three first days the temperature was low, but after the 4th it ranged near the monthly average. The highest temperatures were generally on the 21st, with the maxima mostly between 70° and 75°. The precipitation was well distributed through the period and over the State, with only slight departures from the monthly average. The principal storm occurred on the 9th and 10th, with heavy precipitation, generally as rain, and high winds along the coast. The month as a whole was pleasant, and the season was near the average at its close.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

[FROM UNITED STATES NATIONAL WEEKLY WEATHER BULLETIN.]

Week ending May 7. — The week averaged warmer than usual in the middle and north Pacific coast districts: also in the west Gulf States and in all districts east of the Mississippi River, with the exception of the upper Mississippi valley, the western portion of the upper Lake region and

the interior of northern New England. In the southern Plateau region and over the eastern Rocky Mountain slope and the Missouri and upper Mississippi valleys the week averaged colder than usual. The rainfall of the week was above the average over the greater part of the Southern States. Moderate to heavy rains occurred in eastern Nebraska, in portions of Iowa, Illinois, Indiana, Minnesota and Wisconsin, and at some stations in southern New England and the Middle Atlantic States. Elsewhere the precipitation was generally below the average, no appreciable amounts occurring in the southern Plateau and Pacific coast regions.

Week ending May 14. — The week averaged warmer than usual on the north Pacific coast, throughout the Plateau and Rocky Mountain regions and in the Missouri and Red River of the North valleys. In all districts east of the Mississippi River the week averaged cooler than usual, being abnormally cool in the lower Lake region, Ohio valley, in the Middle and South Atlantic and east Gulf States, and over the western portion of northern New England, freezing temperatures occurring in all these regions except the South Atlantic and east Gulf States. The rainfall was below the average in nearly all districts east of the Rocky Mountains, the week being practically rainless over the greater part of the central and west Gulf States and in Tennessee, and in portions of the lower Ohio and central Mississippi valleys.

Week ending May 21. — The week averaged cooler than usual in the central and northern Pacific coast districts and over the western portions of the middle and northern Plateau regions. On the immediate west Gulf coast and in extreme southern Florida the week averaged slightly cooler than usual, but elsewhere east of the Rocky Mountains the week averaged warmer than usual, being decidedly warm over the middle Rocky Mountain slope and throughout the central valleys, Lake region and Middle Atlantic States, where the daily average temperature excess generally ranged from 6° to 10°. As a whole, the week was drier than usual, a large part of the Atlantic coast and east Gulf States and portions of the central valleys and Lake region receiving no appreciable amount of rain. Heavy rains occurred in

northern Texas and portions of Oklahoma and Indian Territory. Minnesota, eastern North Dakota, Montana and portions of South Dakota, Iowa and southern Florida received more than the average.

Week ending May 28. — The week averaged cooler than usual in the Pacific coast and Rocky Mountain regions and over the northern portions of the upper Mississippi valley and upper Lake regions. The average daily temperature was also below normal in northern New England and in the South Atlantic and east Gulf States. In the lower Missouri, central Mississippi and Ohio valleys, Lake region and Middle Atlantic States the week was considerably warmer than usual. Throughout the Pacific coast and middle and northern Rocky Mountain regions, and also in the upper Missouri, upper Mississippi and Red River of the North valleys the rainfall was much above the average. Good rains fell over most of the country east of the Rocky Mountains, amounts ranging from 1 to more than 3 inches occurring in New England.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending May 7. — New England. Boston: The precipitation was copious in coast sections and lighter, but sufficient, in the interior. There was much cloudiness. The day temperatures were seasonable and nights cool, with frosts on the 3d and 4th.

Week ending May 14. — New England. Boston: The temperature was low, except during the latter part of the week. On the 12th heavy frost was general, the ground freezing in some parts. The precipitation was light in the southeastern portion and copious in the western and northern portions.

Week ending May 21. — New England. Boston: Although frosts occurred during the fore part of the week, the temperature averaged above the normal. There was much sunshine. The precipitation generally was light.

Week ending May 28. — New England. Boston: The fore part of the week was clear and cool, with frost; the middle and last of the week were showery, with thunderstorms, heavy rain being general on the 27th.

THE WEATHER OF MAY, 1906.

The month was characterized by much pleasant weather, there being an average of thirteen clear days, eleven days when the sky was only partly obscured, leaving seven days without sunshine. Notwithstanding the unusual prevalence of fair weather, the total rainfall was considerably in excess of the normal amount for the month. More than half of the monthly amount occurred during one storm, that of the 27th–28th. Excepting this storm, the precipitation was light and in well-distributed showers. The mean temperature of the month shows the weather to have been somewhat warmer than the seasonal average. This is contrary to the popular opinion, for, on account of the many days with easterly winds and the uneven distribution of the temperatures, many considered the month unseasonably cold. The month opened with several days when the mercury was quite high. A cool spell followed, lasting from the 7th to the 12th. High temperatures obtained again from the 13th to the 19th, during which the mercury ranged as high as 90° in some localities, particularly on the 18th and the 19th. The remainder of the month was cool, with slight exceptions, and general light to killing frosts were reported in nearly all except coast sections. Severe local storms were less frequent than usual during this month, although in some localities considerable loss to property and several deaths resulted from electrical disturbances. The weather of the month, as a whole, was very favorable to all out-door pursuits. At the close the season was generally considered to be from a week to ten days later than the average May.

In the circular to correspondents, returnable May 25, the following questions were asked : —

1. How does the present season compare, agriculturally speaking, with a normal season?

2. What is the promise for pastures and mowings, and did fall seeding winter well?

3. How did the bloom of apples, pears, peaches, plums and small fruit compare with the bloom of former years, and has it suffered from frosts?

4. What insects appear to be doing the most damage in your locality?

5. How is planting progressing?

6. Is farm help scarce or plenty; and what proportion can be called good help?

7. What are the average wages paid farm help in your vicinity, with board? Without board?

8. Will there be any marked changes in the acreage of the usual farm crops, particularly corn and potatoes, and do you note any new enterprises in the line of agriculture?

Returns were received from 154 correspondents, and from them the following summary has been compiled: —

The Season.

April was a rather cold month and May opened somewhat backward. The weather of May as a rule was cold but pleasant, there being very little rain during the month, with the result that the season was, at time of making returns, somewhat more backward than the normal in most sections. Rain was much needed at that time, both for germination of seed and for growth of grass and hoed crops, but the heavy rains of the 27th and 28th effectually broke the drought, thoroughly soaking the ground. The frosts on the mornings of the 20th and 21st did considerable damage to early vegetables and gardens.

Pastures and Mowings.

In spite of the exceptionally open winter, grass of all kinds, especially fall seeding, generally wintered very well indeed. The cold weather of the latter part of April and the first portion of May held grass back, feed being slow in starting in pastures and grass making little growth on mowings. Since then the dry weather, with little precipitation and strong winds, has operated to check grass in both pastures and mowings, and at the time of the breaking of the drought it was badly in need of rain in all sections. With seasonable weather in future there should nevertheless be at least an average crop of hay and good feed in pastures, the heavy rains of the 27th and 28th thoroughly soaking the sod

and providing a reserve supply of moisture for the next week or ten days.

Fruit Bloom.

The apple bloom was generally good, many reporting it to be exceptionally heavy, even for the bearing year, and was about normal in time of appearance in most sections. Pears, plums and cherries, however, showed rather a light bloom, and the peach bloom appears to be considerably below the normal in most sections. Small fruits and berries generally bloomed full, though perhaps a little late. The frosts of the 20th and 21st did some damage, particularly on low lands, but it does not appear that the damage was general or severe.

Insects.

At the time of making returns few insects had appeared and those noted were doing little damage. Tent caterpillars were those most frequently mentioned, while cut worms appeared to be more than usually numerous. Other insects reported are currant worms, potato bugs, asparagus beetles, the curculio, black cabbage flies and gypsy and brown-tail moth caterpillars.

Planting.

The month of May was unusually free from rain, and there were more than the usual number of days on which farm work could be pushed. Nevertheless at the time of making returns planting appeared to be somewhat behind the normal in most sections, due largely to the late opening of the month and the cold weather, which prevented the soil from drying out and warming up sufficiently for early planting. The dry weather was also unfavorable for the germination of seeds, and the crops put in had not, in many instances, come up as freely and promptly as desired. With the breaking of the drought these conditions should be remedied, and all seed put in prior to the 27th should germinate readily and make rapid growth.

Farm Help and Wages.

Judging from the returns, there is an unusual scarcity of farm help the present season. There is much complaint as

to the quality of that to be had, but it is probably not below the usual average of the same class of labor in former years. The highest efficiency is not to be expected in any but a very few of those content to be wage earners, either on the farm or elsewhere, and farmers are perhaps inclined to set their standard for "good help" too high, calling only the best good, though not expecting to secure the measure of efficiency they hope for. Wages average about $20 per month with board in the strictly farming districts, and a little higher near the cities. Twenty-eight dollars per month would perhaps be a fair average of the wage paid without board, where tenement, milk and firewood are furnished, and $35 without any of these accessories. For day work farmers are generally obliged to pay $1.50 per day, and higher prices during haying and harvesting.

Acreage of Farm Crops.

There is no particular change in the acreage of farm crops, though perhaps more corn and potatoes have been put in than in immediately recent years. In the Connecticut valley it is probable that the acreage of both tobacco and onions will be slightly increased. New cranberry bog is also reported as being made in more than average amount in southeastern sections. Some correspondents report an increased amount of forage crops as being planted, to supplement the pastures and aid in keeping up the milk supply during the summer months.

NOTES OF CORRESPONDENTS.

(Returned to us May 25.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — The season seems to be a little late, and rain is now needed. Pastures and mowings came through the winter well and promise good crops. Pears bloomed full; apples fairly well; peaches injured more or less by severe weather in April; no other damage by frosts. Currant worms have commenced to do damage. Potatoes are planted, but corn crop and gardens are late in being planted. Farm help is scarce. Wages average $25 per month with board, and $1.50 per day without board. I think there will be about the usual acreage of farm crops.

Alford (Lester T. Osborne). — The season is the most favorable one we have had for a long time up to the present. Pastures and mowings are in better than average condition, and fall seeding wintered well. The fruit bloom is rather below normal. So far no insects have appeared. Planting is nearly finished. Farm help is very scarce, and good help that can use teams and machines is hard to get. Wages average from $22 to $24 per month with board, and $35 per month without board. The acreage of farm crops is about the same as usual.

West Stockbridge (J. S. Moore). — The season seems late at present, but is probably about as usual. Pastures and mowings are looking nicely, and there was no damage to fall seeding. Fruit trees bloomed full, but frosts injured small fruits No insects are doing damage as yet. Planting is progressing about as usual, few gardens made yet. Farm help is very scarce, and but little good help to be had at any price. Wages are from $20 to $25 per month with board, and average $35 per month without board. There are no changes to speak of in the acreage of farm crops. A milk station has been established in town, and much attention is being given to dairy farming.

Becket (Wm. H. Snow). — The season is about an average one so far, with cool nights. Pastures and mowings are looking well, and fall seeding wintered well. A full fruit bloom is expected,

but is not all out yet. Tent caterpillars are doing some damage. Planting is progressing very well. Farm help is very scarce, and there is little good help. Wages average $20 per month with board, and $35 per month without board. More potatoes will be planted than usual.

Richmond (Timothy B. Salmon). — The season is a backward one. The promise for pastures and mowings is good, but fall seeding did not winter well. The fruit bloom is up to the average, but has suffered from frosts. Currant worms and tent caterpillars are doing some damage. Planting is later than usual. Farm help is scarce, and half of it is good help. Wages average $25 per month with board, and $1.50 per day without board. There are no marked changes in the acreage of farm crops.

Hinsdale (Thos. F. Barker). — The season is rather backward and cold. Mowings look green and fall seeding looks well. There is a full average fruit bloom; heavy frost May 20th. No insects have appeared as yet. Planting is now progressing well. Farm help is scarce, and about half of it is good help. Wages range from $18 to $23 per month with board, and from $22 to $30 per month without board. There is not much change in the acreage of farm crops. The apple bloom is very backward, hardly commenced as yet.

Dalton (Wesley B. Barton). — The present season is a good one to date. Pastures are doing finely, and mowings start well; fall seeding in good condition. Apples half a bloom; pears average; no peaches; plums and small fruits full. No insects have appeared as yet. Fully the average amount of planting has been done. Farm help is scarce, and 40 per cent of the supply good help. Wages average $23 per month with board, and $1.65 per day without board. No changes in the acreage of farm crops. Rain is needed, but we have had a splendid time for spring work.

Cheshire (L. J. Northup). — The season is somewhat later than usual. Pastures and mowings are fully equal to former years. Pears, plums and small fruits bloomed very full, and the frost did not hurt them. There are no insects doing damage. Planting is progressing finely because of pleasant weather. Farm help is getting more scarce, and is not as good as in former years. Wages are from $20 to $25 per month with board, and average $1.50 per day without board. There will be more ensilage corn and probably about the same acreage of potatoes planted as formerly.

Williamstown (S. A. Hickox) — The season is a week later than the normal. Pastures are 15 per cent below the normal in condition. There was a medium fruit bloom. No insects have appeared as yet. Planting is progressing fairly well, but is rather

behind the usual rate at this time. Farm help is scarce, and one-fourth of it good help. Wages average $25 per month with board, and $35 to $40 per month without board. There will be no change in the acreage of the usual farm crops. Rain is very much needed.

FRANKLIN COUNTY.

Monroe (David H. Sherman). — The season is backward. Grass looks fairly well on very rich and new seeded fields, but old meadows are very brown for the time of year from lack of rain. Fruit trees have not bloomed as yet; white frosts on the mornings of the 21st and 22d. No insects have put in an appearance as yet. Farm help is scarce, and perhaps half of it is good help. Wages range from $20 to $30 per month with board, and from $1.50 to $2 per day without board. There are no marked changes in the acreage of farm crops.

Charlemont (J. M. J. Legate). — The season is a little later than the average, but the weather has been such that farm work is well along. Pastures and mowings are looking well, but we need rain badly; fall seeding never wintered better. There is more than average fruit bloom, but it has suffered from frosts, though it is not entirely ruined. No insects are doing damage. Potatoes are mostly planted, and our farmers are in the thick of corn planting. Farm help is very scarce, but what there is is good help. Wages average $20 per month with board, and $1.50 per day without board. There is no marked change in the acreage of farm crops.

Hawley (C. C. Fuller). — The season is rather below the average in promise at present. Pastures and mowings are rather dry; and fall seeding lacked snow to protect it. The fruit bloom is not fully out yet, so has not suffered much from frost. Not much trouble from insects as yet. Planting is late. Farm help is very scarce, but what can be obtained is good. Wages average about $25 per month, and about $1.50 per day without board. There are no marked changes in the acreage of the usual farm crops.

Shelburne (Geo. E. Taylor). — The season is a few days late. Grass in pastures wintered well. There is an average fruit bloom, and no damage from frost. No insects have been doing damage to date. Planting is nearly finished. More farm help is needed, but what we have is fair. Wages average $20 per month with board, and from $1 to $1.50 per day without board. The acreage of farm crops will probably run on about the usual lines. Rain is very much needed.

Gill (F. F. Stoughton). — The season is late and dry. Pastures and mowings are not looking very well, owing to the lack of rain.

There was a full fruit bloom, but damage from frost on the 21st. Planting is progressing well. Farm help is scarce. The acreage of the customary farm crops will be about the same as usual.

Deerfield (H. A. Wells). — The season is rather a late one. Pastures and mowings are looking well, and fall seeding never wintered better. All fruit trees bloomed fairly well, though not full; it is still uncertain how much they suffered from frost. There is no damage from insects. Planting is nearly completed. Good help is scarce, especially good teamsters; Polish help plenty. Wages range from $22 to $25 per month with board, and average $1.50 per day without board. There is an increase in the acreage of potatoes; that of corn about the same as usual.

Sunderland (Geo. P. Smith). — April and May have been rather cold and dry. Grass and pastures look well, and fall seeding wintered well. Apple bloom uneven; pears and plums light; not many peaches or small fruits here. No insects are doing damage at present. Corn and potato planting is finished, and tobacco setting has just begun. Farm help is scarce, more so than usual, but two-thirds of it is fairly good. Wages average $21 per month with board, and $1.50 per day without board. No change in the acreage of farm crops. A New York party has bought a farm, intending to raise 50 acres of tobacco.

Erving (Chas. F. Clark). — The season has been rather more backward than usual. Pastures and mowings look promising, and fall seeding wintered well. There is a fair bloom of small fruits and a light bloom of winter apples; no damage from frosts. Insects are doing very little damage. Planting is progressing rather slowly. Farm help is scarce, and half of it good help. Wages average $1 per day with board, and $1.50 per day without board. There are no marked changes in the acreage of the usual farm crops.

New Salem (Daniel Ballard). — The season is about a normal one at present. The promise for pastures and mowings is very favorable now that the dry spell is broken; fall seeding wintered well. There was quite a full bloom of apples, especially Greenings; full bloom also of pears and small fruits; some injury by frost on low lands. Tent caterpillars are doing some damage. Planting is progressing rapidly. Farm help is scarce, with about the usual proportion of good help. Wages range from $18 to $26 per month with board, and from $1.50 upward per day without board. About the usual amount of the usual crops will be planted.

HAMPSHIRE COUNTY.

Enfield (D. O. Chickering). — The season is from a week to ten days late. Dry weather has hurt pastures and mowings; fall seeding wintered well. There has been about an average fruit bloom. Tent caterpillars are doing some damage. Planting is well along. But little farm help is employed here. There are no marked changes in the acreage of farm crops.

Pelham (John L. Brewer). — The season is one week late. Pastures and mowings appear well, and fall seeding wintered fairly well. There is a full bloom of apples, pears, peaches and plums, and so far as we have observed small fruits are blossoming well; light frosts did no damage. No insects are doing damage as yet. Planting is somewhat late. Farm help is scarce, but all that available is good help. Wages average $1 per day with board, and $1.50 per day without board. There will be no marked changes in the acreage of the usual farm crops.

Amherst (Prof. Wm. P. Brooks). — The season is a normal one; if anything, rather exceptionally favorable. Mowings and pastures never looked better, and fall seeding wintered well. Apples made an uneven bloom, on the whole light for bearing year; pears, peaches and plums heavy; currants and strawberries heavy, but latter somewhat injured by frost. Cut worms are doing some damage. Planting is well advanced, corn being quite generally in. Farm help is scarce, and the number of really competent men small. Wages range from $16 to $30 per month with board, and average $45 per month without board. The acreage of tobacco will be increased. Rather more interest is shown in wise selection of fertilizers, and more are using chemicals. More farmers than usual are spraying fruit trees.

South Hadley (W. F. Person). — The season compares well with the normal. Pastures are in fair condition, mowings look well and fall seeding is in good condition. Apples and pears blossomed full, and were not injured by frost. Planting is progressing very slowly. Farm help is very scarce, and about one-third of it good help. Wages average about $22 per month with board, and $1.50 per day without board. There will be a large acreage of corn this year and an average one of potatoes.

Northampton (H. C. Comins). — The season is a fair average one, though rather backward. Pastures and mowings promise well, and new seeding looks well. All fruit trees have blossomed quite full, and there has been no damage from frost. Cut worms are very troublesome on early vegetables. Planting is nearly all done, as the fair weather has given an opportunity for farm work.

Farm help is very scarce, and not over ten per cent is first class. Wages range from $20 to $25 per month with board, and from $36 to $40 per month without board. The acreage of onions and tobacco will be somewhat increased. Rain is greatly needed by pastures and mowings as well as to hasten germination of seeds.

Easthampton (Wm. C. Clapp). — The season is about an average one at present. Pastures and mowings promise well, and fall seeding looks better than could be expected after the open winter. There was a full fruit bloom, but early strawberries suffered from frost. Caterpillars and cut worms are numerous. Planting is in full progress, and some farmers have most of their corn and all their potatoes planted. There seems to be plenty of Polish help, and most of it is good help. Wages range from $15 to $20 per month with board, and from $1.25 to $1.50 per day without board. There will be fully as large an acreage of tobacco, corn and potatoes as usual.

Williamsburg (F. C. Richards). — The season is later than usual, the weather having been cool and the ground not yet well warmed. Pastures and mowings are looking well, but fall seeding winter-killed in some places. Pears, peaches and plums and small fruits gave a full bloom, with no injury from frosts. Tent caterpillars are beginning to appear. Planting is late, but with seasonable warm weather now we will have it well in hand. There is the usual scarcity of help, and that available is poor. Wages average $18 to $20 per month with board, and $30 to $35 without board. The acreage of corn and potatoes will be about as usual. Apples, with exception of Baldwins, show a heavy bloom.

Goshen (Hon. Alvan Barrus). — The season is a week to ten days late. Though late, pastures are fairly promising; also mowings and fall seeding. All fruit trees show a very uneven bloom, all the way from none to very full. Very few insects have made their appearance. Farm help is scarce, and good help out of the question. Wages range from $1.50 to $2 per day with board, and from $1.75 to $2 per day without board. No changes in the acreage of farm crops worthy of mention. There have been severe frosts on low lands, none appearing to be damaging on the hills.

Plainfield (S. W. Clark). — The season is a little late, but is otherwise normal. Grass is looking very well and fall seeding wintered very well. Fruit trees have bloomed full, and there has been no injury from frosts. Tent caterpillars are the only insects that have appeared as yet. Planting is progressing very well, with no delay from rainy weather, but rain will be needed very soon. Farm help has been scarce, but a lot of Poles are just in and they are good help. Wages average $25 per month for six

months with board, and $18 to $20 per month by the year; no help hired without board. Many farmers are giving more attention to potatoes than formerly. The prices of dairy products are a little off from last year, but the quantity and quality are fully up to the normal.

Huntington (Henry W. Stickney). — Pastures are very backward and do not have much feed. Mowings promise well; fall seeding winter-killed on low lands. The bloom for all kinds of fruits is very good, but it is feared that frosts have injured it on low lands. There are very few insects to be seen. Most farmers have finished planting, but rain is needed to germinate the seed. Good help is scarce. Wages average $1 per day with board, and $1.50 per day without board. The acreage of potatoes is larger than usual.

HAMPDEN COUNTY.

Blandford (Enos W. Boise). — The season compares favorably with the normal. The month has been so dry and cold that pastures and mowings do not promise well, and without rain soon the hay crop will be short; fall seeding wintered well. There was a very full bloom of all fruits except peaches, and no damage from frost. No insects have appeared as yet. Much planting has been done and there is yet much to do. Farm help is scarce, and reliable men hardly to be obtained. Wages average from $20 to $25 per month with board, and $35 to $40 per month without board. There are no changes from the usual acreages of the usual farm crops.

Russell (E. D. Parks). — The season is up to the average, except that it is very dry at present. Pastures and mowings need rain; fall seeding wintered very well. The fruit bloom was up to the average, the apple bloom being very full; no damage from frost. Currant worms and tent caterpillars are doing some damage. Planting is nearly completed. Farm help is scarce, and but little good help is obtainable. Wages average $25 per month with board, and $1.75 per day without board. There will be no marked changes in the acreage of farm crops.

Southwick (L. A. Fowler). — The season is quite up to the average. Pastures and mowings are needing rain, and fall seeding wintered well. Fruit trees bloomed well; strawberries suffered slightly from frost in some localities. Cut worms are doing some damage. Planting is well under way. Farm help is scarce. Wages average from $18 to $20 per month with board, and $1.50 per day without board. There are no changes in the acreage of farm crops.

Agawam (J. G. Burt). — The season is about an average one agriculturally speaking. Pastures and mowings look well but need rain; fall seeding wintered well. The fruit bloom was about average, but has probably suffered from frosts. Tent caterpillars are doing some damage. Planting is progressing fairly well. Farm help is scarce, and not more than half of it good help. Wages average from $20 to $22 per month with board, and $35 per month without board. The acreage of farm crops will be about the same as usual.

West Springfield (T. A. Rogers). — The season has been cold and dry. Pastures short, mowings late; fall seeding wintered well. Apples did not make a full bloom; pears, peaches and plums full; small fruits hardly out yet. No insects have appeared as yet. Planting is progressing well, as we can work all the time, the weather being pleasant though dry. Farm help is scarce, but what help we have around here is very good. Wages range from $25 to $30 per month with board, and from $1.50 to $1.75 without board. There is a full acreage of corn and potatoes.

East Longmeadow (John L. Davis). — The season is cold and backward. Old pastures look dry; fall seeding winter-killed in low places. There was a good fruit bloom, but frost must have done some damage. Planting is progressing fairly well. Help is scarce, and farmers cannot afford to pay the price of good help. Wages average $25 per month with board, and $1.75 per day without board. More ensilage corn will be grown than in the past.

Hampden (John N. Isham). — The season is a little late, and rain is needed. Pastures and mowings are starting slowly, and fall seeding wintered unusually well. Apples, pears and small fruits blossomed full; plums light; no injury from frosts. No insects to speak of as yet. Potatoes are mostly planted and farmers are busy preparing for corn planting. Farm help is scarce, but it is mostly good help. Wages average $20 per month with board, and from $30 to $35 per month without board; help by the day $1.50. There is a full acreage of farm crops, and more peach trees than usual are being set out.

Monson (F. D. Rogers). — The present season is an average one to date. Pastures are improving and mowings are in excellent condition; fall seeding wintered well. There was a heavy bloom on apples and pears; plums and peaches fair. No insects are doing any great amount of damage; some currant worms and cut worms. Planting is well along. Farm help is very scarce, and most of it is good help. Wages average $20 per month with board, and $1.50 per day or $30 per month without board. More corn will be planted than usual.

Palmer (O. P. Allen). — The season is very late. Pastures and mowings promise well, and fall seeding came through the winter well. The bloom of all fruit trees was very full, but late frosts have probably done some injury in some localities. But few insects are in evidence as yet. Planting is progressing fairly well, but is late. Farm help is scarce, and about one-third of it good help. Wages average $18 per month with board, and $1.50 per day without board. There will be but little change in the acreage of the usual farm crops.

Holland (Francis Wight). — The season is about an average one to date. Pasture and mowings are fairly good, and fall seeding is in fair condition. The fruit bloom was above the average, but has been severely injured in some places by frost. Tent caterpillars are the only insects doing damage. Planting is being driven hard just now. Farm help is scarce, and not over half of it can be called good help. Wages average $1 per day with board, and $1.50 per day without board.

WORCESTER COUNTY.

Dudley (J. J. Gilles). — The season is from ten to twelve days late, but otherwise is normal. Pastures and mowings up to the present week have done finely, but now are very much in need of rain; fall seeding wintered well. Bloom of all fruits quite profuse; in some instances peaches have suffered from frost. Insects have done very little damage thus far. Planting is progressing with average promptness. Farm help is neither scarce nor plenty, and half of it is good help. Wages average $20 per month with board, and $35 to $40 without board.

West Brookfield (Myron A. Richardson). — There is no feed in the pastures, and while mowings are looking well they need rain. The fruit bloom was about the same as usual, but frosts have done considerable injury in some places. Currant worms appear to be more plentiful and to be doing more damage than usual. Planting is progressing about as usual, though some is later. Farm help is scarce and wages higher than usual, with one-half of the supply good help. Wages average $25 per month with board, and from $1 to $1.50 per day without board.

North Brookfield (John H. Lane). — The season is an average one, but backward. The promise for pastures and mowings is good if we can have rain. There was a full bloom on all kinds of fruit. Very few insects have appeared. Planting is progressing finely, and crops are mostly in. Farm help is about in the usual supply, with 10 per cent of it good help. Wages average $20 per month with board, and $1.50 per day without board.

Oakham (Jesse Allen). — The season compares favorably with the normal. Pastures and mowings look well, but greatly need rain; fall seeding looks well. The fruit bloom is not large, and frosts did much damage on low lands. There are a few tent caterpillars. Planting is nearly completed. Farm help is rather scarce, and perhaps half of it is good help. Wages average $25 per month with board, and $35 without board. There will be about the usual acreage of farm crops.

Templeton (Lucien Gove). — The outlook is not very promising. Pastures are quite short and mowings poor; fall seeding wintered only fairly well. The apple bloom was below average and uneven; pears good; plums scarcely any; small fruits good; blueberries full; no peaches. Tent caterpillars are doing some damage, but are not plenty. Planting has progressed fairly well; seed slow in germinating; some early vegetables cut down by frost. Farm help is very scarce and unreliable. Wages range from $14 to $30 per month with board, and from $1.50 to $1.75 per day without board. There is no material change in the acreage of farm crops.

Royalston (C. A. Stimson). — The season is cold and backward. Pastures and mowings are getting dry, but are in fairly good condition; fall seeding did not winter well. There is a full bloom of all fruits except plums, but it has suffered somewhat from frost. No insects are doing damage. Planting is backward. Farm help is scarce, but what can be procured is fair help. Wages average $26 per month with board, and $1.50 per day without board. There is no particular change in the acreage of farm crops.

Gardner (A. F. Johnson). — May 10 found leaves and blossoms late, but I think that by June 1 they will be up to the average. Pastures and mowings need rain very much. There was a full fruit bloom, but two heavy frosts evidently injured it. No insects have done damage as yet. Planting is progressing slowly. Farm help is in about the usual supply, at the usual wages. There are no marked changes in the acreage of farm crops.

Fitchburg (Dr. Jabez Fisher). — The season is not essentially different from the normal. Pastures and mowings are looking finely, but need rain. No general fruit bloom has surpassed the present for abundance and favorable conditions for many years. There are scarcely any insects as yet. Planting is progressing fairly well. Farm help is scarce, except the poorest. Wages average $20 per month with board, and $1.50 per day without board. There is nothing new to be noted in the acreage of crops. The season, as indicated by the apple bloom, is two days earlier than the average for fifty years.

Princeton (A. O. Tyler). — The season is about a normal one. Pastures and mowings started well, and fall seeding wintered well. There was a good fruit bloom, but it has suffered from frosts. No insects are doing damage at present. The season is later than usual, and not as much planting has been done. Farm help is rather scarce, and about one-fourth only can be called good help. Wages average $20 per month with board, and $1.50 per day without board. There will be no marked changes in the acreage of farm crops.

Harvard (John S. Preston). — The season is rather cold and backward. Pastures and mowings have been looking very well, but are beginning to suffer from want of rain; fall seeding wintered well. Fall apples, pears and small fruits bloomed well; Baldwin apples about half a bloom. No particular damage by insects as yet. Planting is going along as well as usual. Help is rather scarce, and about half of it can be called good help. Wages average $20 per month with board, and about $1.75 per day without board. I do not think there will be any particular change in acreage of farm crops this year.

Sterling (Henry S. Sawyer). — The season is colder and drier than usual. Feed is not plentiful in pastures, but mowings are looking fairly well. There was a very good bloom for all fruits, and frost has done no damage. No insects are doing damage. Planting is progressing fairly well, but cold weather and frosts hold it back somewhat. Farm help is very scarce, and not one-fourth of it good help. Wages average $20 per month with board, and $1.80 per day without board. There will be about the usual acreage of the various farm crops.

Worcester (Silas A. Burgess). — This is a favorable season. Pastures and mowings promise well, and fall seeding wintered well. The bloom of all fruits is superior and has not suffered from frosts. Currant worms and tent caterpillars are doing some damage. Planting is progressing well. Farm help is rather scarce, and about one-half of it is good help. Wages average $22 per month with board, and $1.50 per day without board. There is an increased acreage of corn; other crops about the same as usual. Extremes of heat and cold during the month, with repeated frosts doing damage in some low places.

Leicester (H. H. Kingsbury). — The season has been rather cool, with a small amount of rain. Pastures and mowings are in fine condition; no fall seeding. There is a full bloom of all fruits grown, as well as wild berries, with no injury from frost. Potato planting is completed, and the ground is ready for corn. Farm help is scarce, as usual at this season of the year. Wages average

$25 per month with board, and $1.50 to $2 per day without board. Milk production for local and Worcester market is the leading business of our farmers, and there is no disposition apparent to make any change.

Sutton (C. P. King). — The season is later than usual and a little too dry. Pastures are in good condition; mowings need rain; fall seeding rather light. The fruit bloom was excellent, but it suffered considerably from frost. Tent caterpillars are doing some damage. Planting is progressing fairly well, and a large amount is being done. Farm help is scarce, and about 20 per cent of it good help. Wages average $20 per month with board, and $1.50 per day without board. More corn and less potatoes than usual are being planted. A large amount of forage crops will be planted, farmers tending to raise crops more for the production of milk than for the market.

Blackstone (O. F. Fuller). — The season is about an average one. Pastures and mowings are looking fairly well, and fall seeding looks good. The fruit bloom is very good compared with former years. Cut worms are doing some damage. Planting is progressing fairly well but is backward. Farm help is scarce. Wages average $20 per month with board, and from $1.25 to $1.50 per day without board. Less potatoes will be planted than usual, with acreage of other crops about as usual.

MIDDLESEX COUNTY.

Sherborn (N. B. Douglas). — The season is a little late, but otherwise very favorable. Pastures are slow in starting; mowings and fall seeding promise well. There was a full bloom on all fruits, with very little damage from frost. No insects are very troublesome as yet. More than the usual amount of planting has been done to date. Farm help is scarce, and half of it good help. Wages average $22 to $25 per month with board, and $1.50 to $1.75 per day without board. There appears to be about the usual acreage of farm crops.

Framingham (J. S. Williams). — The season started well, with everything favorable at early seed time, but it has since been exceedingly dry and cold, with frosts on the 21st and 22d, and much wind. Pastures, mowings and winter grain looked well, but the drought is affecting grass badly. The bloom of apples and pears was good; damage to strawberries from frost, and probably to peaches. No trouble from insects as yet. Planting has been pushed with energy, and a large acreage is in. Farm help is scarce, and one-third of that available is good help. Wages aver-

age $25 per month with board, and from $35 to $38 per month without board. Potatoes will probably receive more than ordinary attention.

Stow (Geo. W. Bradley). — The season is not as forward as usual. Uplands are not looking as well as a week ago; fall seeding fairly good. There is about an average fruit bloom, with some strawberries damaged by frost. There have been but very few insects as yet. Some are about through planting, some just beginning, and some are waiting for rain. Farm help is scarce, and about one-fourth of it good help. Wages range from $12 to $25 per month with board, and from $1.50 to $2 per day without board. There will be less corn and more potatoes planted than usual.

Westford (J. W. Fletcher). — The season is about an average one, except that it is very dry. Fall seeding came through the winter well, but is much in need of rain. The fruit bloom is about an average one, but frost did some damage to small fruits. The brown-tail moth is our most troublesome insect. Planting is rather backward. Farm help is scarce. Wages range from $20 to $25 per month with board, and from $35 to $40 per month without board. There are no marked changes in the acreage of farm crops.

Chelmsford (P. P. Perham). — The present season is ten days later than the average. Pastures and mowings are looking finely, and fall seeding made a good start. The bloom of apples, pears, peaches and small fruits compares well with former years, and has not suffered from frosts. No insects are doing damage. Planting is mostly completed. Good farm help is very scarce. Wages average $20 per month with board, and $35 per month without board. There will be a slightly larger acreage of corn and a slightly smaller one of potatoes than formerly.

Billerica (Geo. P. Greenwood). — The season is about an average one. Grass looks well, and fall seeding wintered well. There is a heavy bloom on apples, but rather less on small fruits. Brown-tail moths are doing some damage. Planting is progressing fairly well. Farm help is very scarce. Wages average $22 per month with board, and $35 per month without board. The acreage of farm crops will be generally decreased in this vicinity.

Concord (Wm. H. Hunt). — The season is late, and the ground could not be worked as early as usual. Fall seeding did well, and pastures and mowings look well. The apple bloom was quite full; pears blossomed very full; other fruits normal. Cut worms are abundant, tent caterpillars few. Planting is nearly completed. Good farm help is scarce. Wages average from $20 to $25 per

month with board, and from $35 to $45 per month without board. The crops grown about here are about the same in acreage as usual.

Wakefield (Charles Talbot). — The season is about an average one. Pastures and mowings are looking finely, and fall seeding wintered well. There was a very heavy bloom on peaches; pears light; apples very good; cherries light; late frosts hurt peaches. Planting is a little later than usual, but is progressing well. Farm help is scarce, and most of it poor help. Wages range from $16 to $20 per month with board, and $35 to $40 per month without board. There is about the usual acreage of the various farm crops, with perhaps more attention paid to small vegetables. Late frosts have done considerable damage.

Winchester (Samuel S. Symmes). — The season is much colder than usual, with strong winds, making crops backward. Pastures and mowings are getting very dry; fall seeding wintered well. No apple bloom; pears and peaches full; plums light. Cut worms and gypsy and brown-tail moth caterpillars are doing some damage. Planting is very nearly completed, as we have had much fair weather. Help is scarce, and about half of it good help. Wages range from $25 to $30 per month with board, and from $1.50 to $1.75 per day without board.

Newton (G. L. Marcy). — The season is colder and at present drier than usual. If we have rain immediately we will get an average hay crop; pastures are dry; fall seeding is doing well. The fruit bloom is light, with no damage from frosts. Cut worms are doing some damage. Planting is progressing well. Wages range from $20 to $25 per month with board, and from $10 to $12 per week without board. There are no marked changes in the acreage of farm crops.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — The season is about normal, but a little later than some seasons. Pastures and mowings are looking well, and fall seeding wintered well. Apples light bloom; pears and peaches full; plums fair; small fruits full; no frost to do any damage. There are a few tent caterpillars and brown-tail moth caterpillars doing damage. Planting is a little late. Help is scarce, and about one-fourth of it good help. Wages range from $20 to $25 per month, and average $1.50 per day without board. There are no marked changes in the acreage of farm crops.

Haverhill (Eben Webster). — The season is a little late, but we are having good working weather. Fall seeding is in fair con-

dition, and pastures and mowings in good condition. There was a good bloom of pears, peaches, plums and small fruits; apples fair; peaches not so good; no damage from frost. Brown-tail moths are doing some damage. Planting is almost completed. Farm help is scarce, and about one-third of it is good help. Wages range from $20 to $25 per month with board, and average $1.50 per day without board. There are no marked changes in the acreage of farm crops, except that market-gardeners are doing rather more than usual.

North Andover (Peter Holt). — The season is somewhat late. Grass started well, but needs rain. There has been a good bloom of all kinds of fruit, and there has been no frost to injure it. Where the brown-tail moth nests were not destroyed the caterpillars are working. Planting is nearly completed. There are plenty of men to be had by the day, but no really good farm hands. Wages average from $20 to $22 per month with board, and about $1.50 per day without board. There will be about the usual acreage of the various farm crops.

Hamilton (Geo. R. Dodge). — The season is later than the normal. Pastures and mowings are short and thin; early fall seeding wintered well. Summer and fall apples, pears and peaches bloomed full; plums not up to previous years; no damage from frost. Tent caterpillars and brown-tail moths are doing some damage. Planting is progressing slowly, and much is not yet done. Farm help is scarce and quality poor. Wages average $30 per month with board. There is about the usual acreage of potatoes and corn.

Wenham (N. P. Perkins). — Some crops may be a few days late, but as a rule it is a normal season. Grass fields that were well manured wintered well, but some others will have to be resown. There was a small bloom of all kinds of fruit, but wild berries bloomed full. Tent caterpillars are doing some damage. Early planting is completed and late crops are being pushed forward. There is plenty of poor help around, and about one-fourth the supply is good help. Wages average $20 per month with board, and $1.50 per day without board. About the usual line of crops is being planted. Sweet corn came up very poorly, either owing to poor seed or to the soil being too cold.

NORFOLK COUNTY.

Westwood (Henry E. Weatherbee). — The season is a little late, but is now warm and dry. Pastures and mowings started well, but need rain or there will be a short crop; fall seeding wintered well. There was a full bloom of fruit and small fruits, and

but little damage from frosts. There is not much damage from insects as yet. Most farmers are nearly through planting. Farm help is very scarce, and it is very hard to get good help. Wages average from $25 to $30 with board, and from $40 to $45 per month without board. There will be about the usual acreage of the various farm crops.

Norwood (Frank A. Fales). — The season is fully fifteen days late, and is cold and dry. Pastures are poor, but mowings look well, and fall seeding is in good condition. Apples, pears and small fruit bloomed well; some damage to strawberries from frost. No insects are doing damage so far. Planting is rather late. Farm help is scarce, and three-fourths of it good help. Wages average $24 per month with board, and $1.75 per day without board. There is no change in the acreage of farm crops. Japanese millet is being raised more each year for forage, to help out pastures.

Walpole (Edward L. Shepard). — The season is late, cold and dry. Pastures and mowings are looking well, and fall seeding fairly well. The apple bloom was above the average; other fruits a little below; small fruits injured by frost. Have not noticed any damage to speak of as yet from insects. Planting is more than half done. Farm help is scarce, and only a small proportion is good help. Wages range from $20 to $25 per month with board, and from $1.50 to $2 per day without board. There is about the usual acreage of farm crops.

Millis (E. F. Richardson). — The season is late. Pastures and mowings are in good condition, and fall seeding wintered well. There was an extra good fruit bloom, and no damage from frost. No insects are doing damage as yet. Planting is a little late. Farm help is scarce, and two-thirds of it good help. Wages average from $20 to $28 per month with board, and from $35 to $48 per month without board. More corn will be grown than usual.

Franklin (C. M. Allen). — The season is an average one thus far. Pastures and mowings are in poor condition, and fall seeding wintered only fairly well. There has been no damage to the fruit bloom from frost. Insects are only beginning business. Planting is practically completed. Farm help is scarce, and a very small proportion of it is good help. Wages average $25 per month with board, and from $1.50 to $1.75 per day without board. More intensive farming is practised every year. Rain is needed, especially for hay and pastures.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — The season is a full average one. Pastures and mowings promise well, and fall seeding is in good condition. Apples had a small bloom; pears a very full bloom; strawberries a full bloom. No insects have appeared as yet. Planting is progressing well. Help is very scarce. Wages average $25 per month with board, and $1.50 per day without board. The acreage of potatoes will be decreased.

Mansfield (Wm. C. Winter). — In point of time the season is about normal, but the ground is rather dry. Fall seeding wintered well, but it has been too dry for pastures and mowings. Apples and pears gave about a normal fruit bloom; peaches above normal; plums light and somewhat injured by frosts. Currant worms and curculios are doing some damage. Planting is progressing rather slowly. Farm help is scarce, and there is very little good help to be had. Wages range from $20 to $25 per month with board, and from $1.50 to $1.75 per day without board. There will probably be a decreased acreage of farm crops, owing to the scarcity of help. Strawberries look unusually well, though slightly injured by frosts.

Seekonk (John W. Peck). — The season compares very favorably with a normal season. Grass and small crops need rain. Fruit bloom must have suffered on low ground as we had a very severe frost. No insects have appeared as yet. Planting is progressing finely, with a large acreage of crops put in. Farm help is plenty, but is all Portuguese, and three-fourths of them are good help. Wages average $20 per month with board, and $34 per month without board. The season has been a peculiar one, and it is astonishing how well crops are advanced.

Dighton (James N. Paul). — The season is late and very dry. Pastures are poor, and mowings promise to be very light because of lack of rain; fall seeding did not winter well. Apples made a very poor bloom; pears and plums poor; no peaches; no damage from frost. Asparagus beetles, cut worms and potato bugs are doing some damage. Planting is late. Farm help is scarce, and is mostly poor help. Wages range from $15 to $30 per month with board, and from $1.25 to $1.75 per day without board. There will be more corn and less potatoes grown than usual, and a large acreage of tomatoes will be set. The strawberry crop promises well, but is suffering from want of rain at present.

Dartmouth (L. T. Davis). — The season is not as forward at this time as usual. Pastures and mowings are later than most years; fall seeding wintered very well. Many orchards have

hardly bloomed at all, others quite heavily. No damage from insects as yet. Planting is progressing very slowly. Farm help is scarce and poor, and not over one-third of it is reliable help. Wages range from $20 to $25 per month with board, and from $9 to $12 per week without board. There may be more corn planted than usual, otherwise no change in the acreage of farm crops.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — The season is about an average one. Pastures and mowings are in poor condition on account of the dry weather; fall seeding wintered well. There was a very full fruit bloom, and not much injury from frost. Cut worms and black cabbage flies are doing some damage. Planting is progressing well. Farm help is scarce, and not over half of it good help. There are no marked changes in the acreage of farm crops.

Norwell (Henry A. Turner). — The season is about a normal one. The promise is good for pastures, and fall seeding went through the winter well. The apple bloom is light; pears and peaches blossomed well, and frost has not injured them. Currant worms are plenty. Planting is well under way. Farm help is not very plenty, but what there is is good help. Wages average 15 cents per hour without board. Corn seems to be raised more than formerly.

Hanson (Flavel S. Thomas, M.D.). — The season is about normal, but the nights have been quite cold. Pastures, mowings and fall seeding are all in good condition. All fruits bloomed well, except winter apples; severe frost this week, but not much damage. Insects are not doing any serious damage. Planting is progressing well, though some are delaying on account of frosts. Farm help is scarce, the best help being attracted to other pursuits, with shorter hours and better pay. There is no marked change in the acreage of farm crops. We sadly need rain.

Halifax (G. W. Hayward). — The season is late, but with plenty of rain and sunshine it will catch up. Pastures started well, but need rain; mowings look finely and wintered well. All kinds of fruit bloomed well, but late frosts may have injured them somewhat. Cut worms are plenty. Nearly all planting is completed except corn, and most of that is in. Farm help is very scarce, but is good help when it can be got. Wages range from $20 to $25 per month with board, and average $1.75 per day for good help. Cranberry bog to the amount of 200 acres is being made in town. No change in the acreage of farm crops.

Carver (J. A. VAUGHAN). — The season has been an average one. Pastures and mowings have grown rapidly in the past ten days, but now need rain. There is not a very full fruit bloom, and frosts have destroyed many strawberry blossoms. But few insects have appeared as yet. Planting is progressing as fast as the ground is in good condition. Farm help is scarce, and mostly foreigners, but few of whom understand our farm work. But few board their help, and wages average $1.65 per day without board. A large area of cranberry bog is being made.

Rochester (GEO. H. RANDALL). — The season is somewhat late. Pastures and mowings started well, but need rain, and fall seeding wintered well. There was generally a good fruit bloom; frosts may have done some damage. Cut worms and currant worms are doing some damage. Planting is progressing slowly, and there is much yet to be done. Farm help is scarce, and perhaps half of it is good help. Wages range from $20 to $25 per month with board, and average $1.50 per day without board. The acreage of farm crops will be less than usual on account of scarcity of help. Cold, drying winds have prevailed for a considerable proportion of the month, causing poor germination of many seeds.

BARNSTABLE COUNTY.

Bourne (DAVID D. NYE). — The season compares favorably with the normal. Pastures and mowings promise well, and fall seeding wintered well. The fruit bloom is looking very well, and compares well with former years. Tent caterpillars are doing some damage. Planting is progressing slowly, owing to cold nights and not very high day temperatures. Farm help is very scarce, and one-half to three-fourths of that available is good help. Wages average $20 month with board, and $2 per day without board. There are no marked changes in the acreage of farm crops. There were severe frosts on the 21st and 22d, injuring some early vegetables.

Dennis (JOSHUA CROWELL). — The season is about an average one. Pastures and mowings look well, but are beginning to need rain. All fruits have bloomed well, but there has been some damage from frost. Tent caterpillars are doing some damage. Planting is nearly completed. Farm help is scarce, and perhaps half of it is good help. Very little help is boarded; wages average from $1.50 to $2 per day without board. A severe frost the morning of the 22d did some damage to cranberries and strawberries.

Harwich (AMBROSE N. DOANE). — The season is much cooler than usual, and the crops are backward. Pastures and mowings

promise well. There was a good fruit bloom, and frost has done some damage to small fruits. Tent caterpillars are doing some damage; no cranberry worms as yet. Planting is about all over. Farm help is not plenty, and the quality is medium. Wages average $20 per month with board, and about $1 per day without board. Acreage of farm crops about the same as usual, but more small fruits are growing than usual.

Eastham (J. A. Clark). — The season is a few days later than the normal. The promise for pastures and mowings is good. The bloom of all kinds of fruit trees was full, and there has been no damage from frost. Asparagus beetles are more plenty than usual of late. Planting is progressing well. Farm help is scarce. Wages average $25 per month with board, and range from $40 to $45 per month without board. More corn than usual will be planted.

Wellfleet (E. S. Jacobs). — The season compares well with former years. Pastures and mowings are in good condition, and wintered very well indeed. Fruit trees of all kinds bloomed finely. Cut worms are doing some damage. Planting is progressing well. Help is hard to get, and what we do get is poor help. Wages average about $1.25 per day without board. There are no changes in the acreage of farm crops as far as I can see.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — The season is about an average one to date. The promise for pastures and mowings is poor unless we have rain soon. The fruit bloom was average, and although we have had some frosts they apparently did not injure it. Tent caterpillars are doing some damage. Planting is well advanced. Wages average $20 per month with board, and $1.50 to $2 per day without board. There are no marked changes in the acreage of farm crops.

NANTUCKET COUNTY.

Nantucket (H. G. Worth). — The season is a little backward. Mowings and pastures are looking well, but need rain. There is no fruit in this county. Potato bugs are the only insect that has appeared as yet. Planting is progressing about as usual. Farm help is scarce, and very little of it is good help. Wages average $25 per month with board, and range from $35 to $40 per month without board. There is no marked change in the acreage of farm crops. More people are interested in poultry than formerly.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

THE HOME GARDEN.

By Prof. F. W. RANE, *Department of Horticulture and Forestry, the New Hampshire College.*

Just how to handle, plan and arrange, select best varieties, and, in a nutshell, get satisfactory results in caring for a home garden, is not an easy thing to explain satisfactorily in a brief discussion. A successful garden is the result of an apparent interest in the undertaking by the owner himself. Let us first awaken this.

To get up an interest and to get best results I would say start in early in winter, when the seedsmen's catalogues begin to appear soon after Christmas, to study them and get out the seed order. This of necessity must be preceded by a plan of the garden and the area of each crop to be grown. It is a good practice to consult a neighbor who has a reputation for having a successful garden, and get all the points we can. The commercial men who are growing on a large scale are also always of a generous disposition, and ready to give any one the information he cares most for. There is a mistaken impression, seemingly general, that large growers do not select the better varieties for use, and therefore the varieties grown by them are not the best for the home garden. From an extended experience and acquaintance with both the average person making his own garden and the commercial grower, I am convinced that the varieties grown by the latter are far superior. The commercial man is constantly studying the problem of varieties, and it is a part of his life's work to take advantage of any improvements as soon as they are proven valuable. Neither is he led astray by the too frequent fake novelties commonly grown by many novice gardeners. Some of the State experiment stations make a very close study of vegetable growing as a part of their horticultural work, and are ever ready to suggest what they consider the best lists of varieties for planting, and to

pass judgment upon new things which they have tested. Bulletins are available, either from the State experiment stations or from the United States Department of Agriculture, that have been written to assist such of us as care to make a garden. Without looking the matter up, I can recall many bulletins that briefly and in a practical way give just the information desired in growing certain crops. Some of those sent free by the United States Department of Agriculture, Washington, D. C., called Farmers' bulletins, are: No. 94, "The Vegetable Garden;" No. 61, "Asparagus Culture;" No. 148, "Celery Culture;" No. 154, "The Home Fruit Garden;" No. 39, "Onion Culture;" and at the New Hampshire Station, Durham: Bulletin No. 99, "A Selected List of Vegetables for the Garden;" No. 86, "Growing Watermelons in the North;" No. 74, "Growing Strawberries in New England;" No. 52, "Growing Muskmelons in New England," etc. Many similar bulletins are likewise to be had from the Massachusetts Experiment Station of Amherst, for the asking.

Large Bell Pepper.

With this as a start, we should be well fortified for making a success with our garden. After reading, thinking over and digesting as much as we can, we are prepared, with seed ordered and on hand, to proceed. In order to cover the ground and touch on the more important matters, let us discuss each step in order, as far as possible.

I. *Fall Plowing.* — After frost has come in the fall rake together and clean up all dead vines, cabbage stumps, etc., and throw them upon the compost heap; then plow up the ground fairly deep, and allow the furrows to remain on edge over winter. Freezing and thawing, with free access of air to the soil, are beneficial, and assist in destroying insects. In the spring such soils dry out early, and are more quickly put in condition for planting.

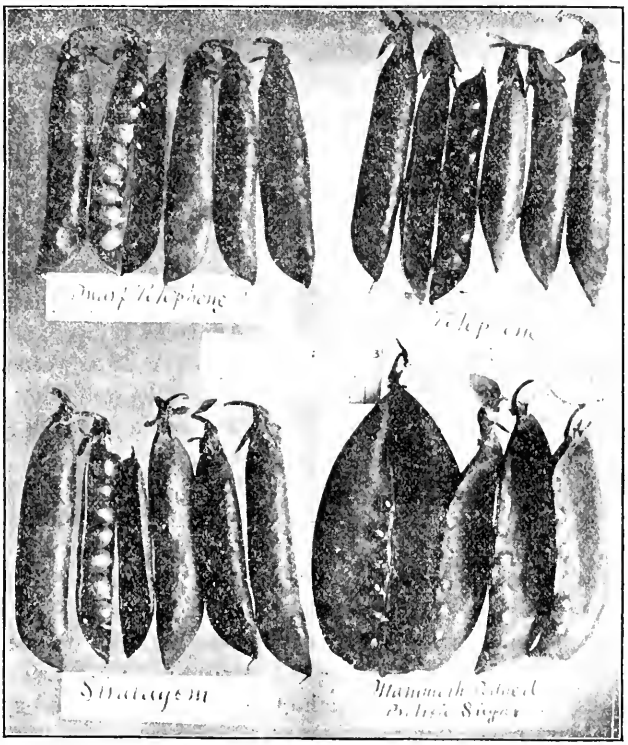
II. *Plant Food.* — The keynote for success with the home gar-

den is this question of feeding the plants. We do not expect to get results from unfed animals; neither shall we get much pleasure in gardening unless we make the conditions necessary for good results. Let us take the time to visit some of the large gardeners about Arlington, Belmont, etc., and get an idea of how they feed plants; and if we follow their example, the most essential problem in suc-

WINNINGSTADT CABBAGE; EARLY SPRING CABBAGE.

ceeding in the home garden will have been solved. Stable and barn manures are the best fertilizers at all times. Commercial fertilizers are all right in their place and when used by persons who are experienced in such use, but call upon them when you are more experienced, and have your soil in a high degree of fertility. If you haven't enough manure for one-half acre, better cut your area down to one-fourth acre, for you will get better and more satisfactory results.

In the fall plowing turn under a good heavy application of manure, and then in the spring after preparing a good seed bed use plenty of well-rotted manure in the furrows or hills. We can just as well get two crops off the land as one, if the rotations are properly planned. Failure to succeed with gardening is due more to lack of plenty of good manure than any other one thing. We cannot get something from nothing; spend more money on manures. After putting on what you think is enough, double the amount.

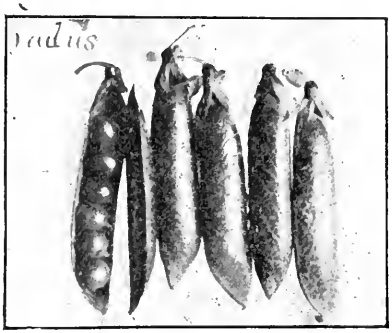


VARIETIES OF MAIN CROP PEAS.

III. *Cultivation.* — The garden should be kept in a high state of cultivation throughout the season. Cultivation keeps the soil in ideal physical condition for plants to grow in, and it keeps the weeds in check. Begin cultivation as early as possible in the season, and persistently keep ahead of the weeds. The great good, among other things, to come from transplanting crops like cabbage, lettuce, onions, etc., is in being able to cultivate the ground longer and have the weeds well under subjection by the time these crops are set out. By germinating the weed seeds and

then quickly destroying them by frequent cultivation early in the growing season, much labor in weed-killing can be saved later.

The old-fashioned method of growing vegetables in beds, thus necessitating so much hand-weeding and back-aching work, should be eliminated by planting in long rows, so that most of the work can be done with the horse. Fencing the garden in is not practised as often as formerly. It is a better policy to be prepared to fence in the poultry and farm animals when they are likely to be troublesome, and allow the garden freedom from the grass and weedy condition almost always present in and about a fence that surrounds the garden. Plant in long, straight rows, and have plenty of room at either end to turn the horse around with ease when cultivating, planting, etc. Less room is needed where hand implements are used, but the same principles apply.



THE GRADUS PEA.

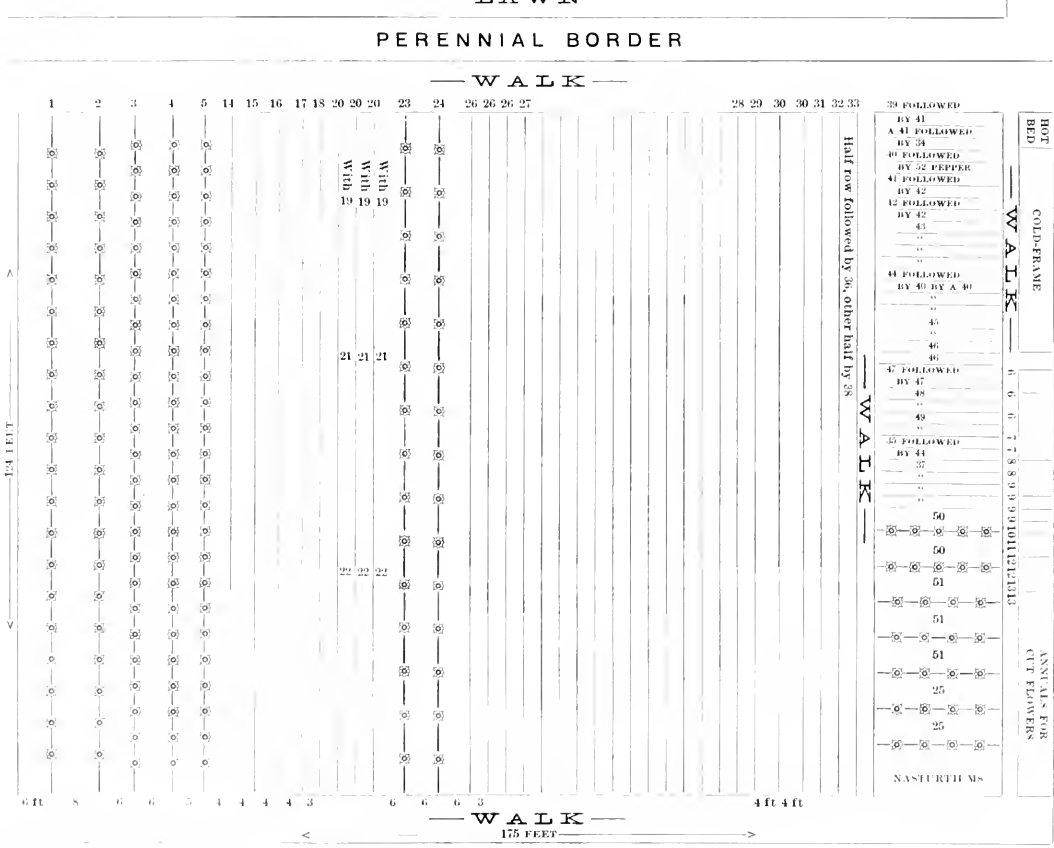
If you do not care to plant the whole row to one kind of vegetable, simply complete it with another requiring similar culture and maturity.

Above all things, keep the garden free from weeds. A small garden well tilled is far better than a large one given less care.

IV. *Garden Implements* (*Tools*). — A good set of garden tools makes the work easier, and it is poor economy not to have the best. No matter if the garden is only a quarter of an acre, to get best results the following implements are suggested for use. Plow; cutaway or disk harrow; Acme or steel-toothed harrow; steel rake; seed drill; cultivators; combination hand wheel hoe; also a good spade, spading fork, hoes, dibbers, markers, wheel-barrow, garden line, etc. The Iron Age or Planet Junior garden tools, both hand and horse, for sale by most implement dealers, should be in almost constant use.

The soil for a garden should be plowed deeply and evenly. Either the cutaway or disk harrow, both deep-cutting implements, is then put on, and in many instances either one can almost take the place of a plow. Following these come the Acme or steel-toothed harrow, which breaks up and mellows the soil, making a fine seed bed. The garden is now raked over, marked out and planted. From now on keep the surface of the soil light and all weeds down. If the rows are indicated, cultivation may begin

PLAN OF KITCHEN GARDEN



LIST OF PLANTS

		No. of Plants
1	Blackberries	20
2	Raspberries, blackcaps	20
3	" red	25
4	Currants	25
5	Gooseberries	6
6	Rhubarb	24
7	Mint	24
8	Thyme	24
9	Sage	24
10	Summer savory	24
11	Basil	24
12	Parsley	24
13	Horseradish	24
14	Asparagus	75
15	New strawberry bed	100
16	Old " "	

		Amount of Seed
17	Bean bush lima	1 qt.
18	" dwarf h'rtic'lt'ral	1 qt.
19	" wax	1 qt.
20	Corn, cory	1 pt.
21	" black Mexican	1 pt.
22	" stowels ev'rgreen	1 pt.
23	Squash (each)	1 pkt.
24	Muskmelon (variety)	1 pkt.
25	Watermelon	1 pkt.
26	Potato, early	¼ bu.
27	" late	2 bu.
28	Sweet peas	1 qt.
29	Celery	1 pkt.

LIST OF SEEDS

		Amount of Seed
30	Tomato	1 pkt.
31	Late peas	1 qt.
32	Medium peas	2 qts.
33	Early peas	1 qt.
34	Egg plant	1 pkt.
35	Early cabbage	1 pkt.
36	Late cabbage	1 pkt.
37	Caulitlower	1 pkt.
38	Brussels sprouts	1 pkt.
39	Radish	1 oz.
40	Letture	1 pkt
A41	Early turnip	1 pkt.
A40	Late "	1 pkt

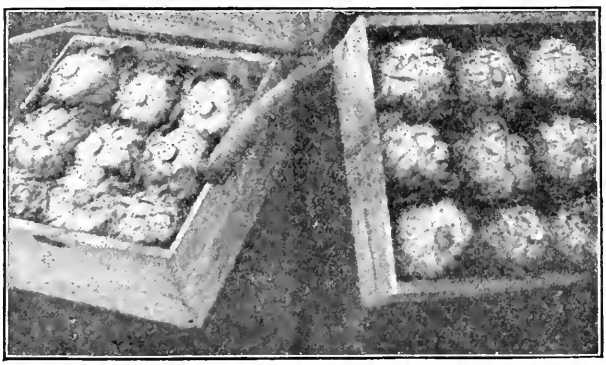
		Amount of Seed
41	Beet	1 pkt.
42	Carrot	1 pkt.
43	Onion sets	12 qts.
44	Spinach	2 oz.
45	Salsify	1 pkt.
46	Parsnip	1 pkt
47	Kohl-rabi	1 pkt
48	Kale	1 pkt
49	Okra	1 pkt.
50	Bush squash	1 pkt
51	Cucumber	1 pkt
52	Pepper	1 pkt

By CLARENCE FOWLER of the New Hampshire College

Scale 1-2' = 12'

even before the plants appear above ground. The modern wheel hoe, with its various ingenious attachments, is a great labor saver. The weeder attachments are very effective in combating small weeds when the crop is just starting. The wheel hoe can be used to hoe both sides of one row, or between the rows in level culture. It will also throw the soil either to or from the row. This tool alone cheapens garden making a great deal, especially lightening the unpleasant task of weeding. Plant the rows far enough apart, as shown in the accompanying garden plan, to do the cultivation with horse power. The Horse-Hoe and Cultivator is a very good cultivator. It can be adjusted to varying depths and widths, which is an advantage at times. The Steel Diamond-toothed Cultivator is a fine implement for level and fine culture.

It is not entirely the question of having all kinds of implements so much as it is in having enough and using them judiciously.



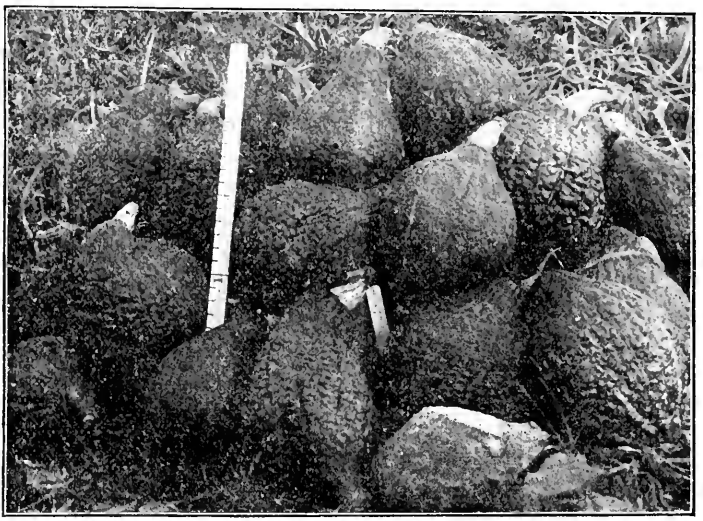
Big Boston Lettuce.

Plan to go over the garden at least twice a week during the growing season.

V. *Planting.* — After the garden has been well enriched and made an ideal seed bed by thorough tillage and preparation, we are ready to plant it. The plan has been well worked out, and all that is necessary now is to plant each variety at the proper time and in its place. Every garden maker will vary plans to suit his needs, as no two will agree as to the amount and kinds of vegetables or small fruits they will grow. A very good plan is the accompanying one by Mr. Clarence Fowler, a former student at the New Hampshire College. It is quite complete, perhaps more so than many would care to follow, but has the good features desired in a plan. The short rows at one end are utilized for those crops requiring frequent plantings in order to have a succession, and not desired in large quantities.

The time to plant varies with the locality. The experience of those who have lived in the community for some time will be of value in determining this point. The dates differ more or less with the seasons. As a rule, all of the hardy vegetables for the vicinity of Boston should be planted by April 20, and the tender varieties from May 10 to June 1. Tender plants, like tomatoes, should be set by June 1. Egg plants had best be kept in the frame or greenhouse a week later before transplanting.

As well as I can determine, the best time for planting various vegetables in the vicinity of Boston is as follows : —

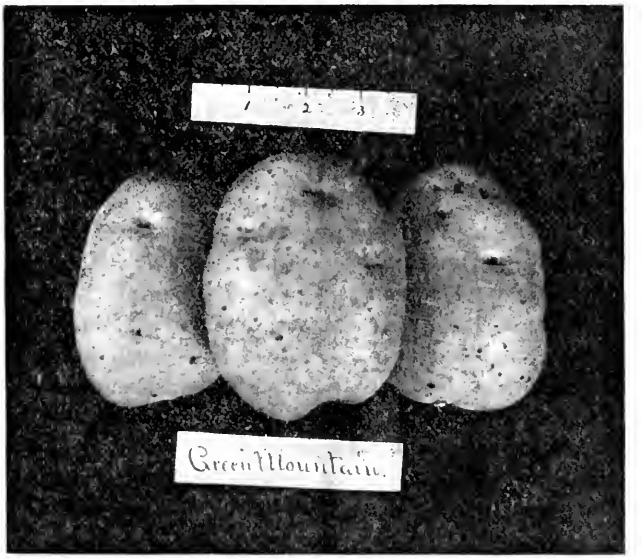


Warted Hubbard Squash.

Asparagus, end of April ; *Bush Beans*, first week in May ; *Pole Beans*, middle to last of May ; *Lima Beans*, June 1 ; *Beets*, middle of April ; *Cabbage*, set out last week in April or first in May ; *Carrots*, last of May ; *Cauliflower*, May 1 to July 1 ; *Celery*, early, April 1, late, July ; *Sweet Corn*, May 1 ; *Cucumbers*, May 10 ; *Egg Plants*, in hotbed, March 15 ; *Peas*, last of April to May 1 ; *Radishes*, April 1 to June 15 ; *Spinach*, September 1 ; *Tomatoes*, plants out of doors, May 25 ; *Turnips*, for fall use, July 1 to August 20 ; *Melons*, May 15 ; *Squash*, May 15 ; *Potatoes*, May 1.

VI. *Rotations.* — With the garden well enriched, it should be our aim to produce all we can from it. By studying out the approximate time it takes various crops to mature, and thus planning for other crops to take their places, two or more crops can be raised upon the same ground. A few crops that require the whole

season to mature in are: *Long Blood Beets*, *Egg Plants*, *Watermelons*, *Onions*, *Peppers*, *Winter Squash* and *Tomatoes*. Other vegetables mature more quickly; for example: *String Beans*, 50 to 60 days; *Lettuce*, *Turnip Beets*, *Summer Squash* and *Turnips*, in about 65 days. *Corn*, *Early Cabbage* and *Cauliflower* require somewhat more time, while *Radishes* can be grown in about one-half the time. By starting many vegetables in the hotbed or cold frame, and growing them in trays, pots, tin cans, old strawberry boxes, etc., and thus being ready to set the partially grown plant in its permanent quarters, much time can be saved and thus an



GREEN MOUNTAIN POTATO.

extra crop obtained. *Lettuce*, *Cabbages*, *Beets*, *Onions*, *Muskmelons*, *Cauliflower* and *Celery*, during a large portion of their period of development can be confined to a limited space and then finally transplanted to their permanent places to mature. By so doing we not only get more crops off a given area, but we are able to keep the soil in better condition for the plants themselves. As soon as one crop is taken out, the soil should be put in fine condition for the next plants to go in. Weeds are largely eliminated by this practice.

VII. *Varieties.* — It is not an easy matter to say just which one or two varieties are the best vegetables to plant, when there are upwards of a hundred or more varieties of each kind. In offering

the following list, therefore, it is given only as suggestive. No one can make a mistake in growing at least the following varieties, as they stand well up at the head of the list. These results are from our experience in growing large numbers of vegetables at the New Hampshire Experiment Station each year.

Bush Beans, — Giant Stringless Green Pod, Valentine, and Wardwell's Kidney Wax; *Bush Lima Beans*, — Henderson's or Sieva; *Beets*, — Eclipse or Crosby's Egyptian; *Early Cabbage*, — Early Spring and Winningstadt; *Late Cabbage*, — Succession and Lupton; *Carrots*, — Danvers Half Long and Chantenay; *Cauliflower*, — Snowball and Erfurt; *Celery*, — for early use, Golden Self-blanching; for fall and early winter, Boston Market; for winter, Pascal; *Sweet Corn*, — for very early, Early Cory; second early, Crosby's Early; medium or late, Potter's Excelsior or Squantum; *Cucumbers*, — White Spine; *Egg Plants*, — New York Improved Large Purple; *Lettuce*, — Big Boston, New York, Grand Rapids; *Muskmelons*, — Emerald Gem, Rocky Ford, Montreal; *Watermelons*, — Cole's Early, Boss, Black-eyed Susan; *Onions*, — Yellow Danvers; *Parsnips*, — Hollow Crown; *Peas*, — early, Gradus or Prosperity, Nott's Excelsior; late, Telephone; Stratagem, dwarf and tall; *Peppers*, — Sweet Mountain, Large Bell, Improved Thick Long Red; *Potatoes*, — Early Rose, Delaware, Green Mountain, Washington; *Pumpkins*, — Small Sugar, Golden Oblong; *Radishes*, — Early Scarlet Globe, French Breakfast, Woods' Early Frame; *Squash*, — Early Prolific Marrow, Essex Hybrid, Warren, Hubbard; *Tomatoes*, — Earliana, Dwarf Champion, Stone; *Turnips*, — Early Milan, Early Snowball, White Egg, Red-top Globe; *Swedes or Ruta-bagas*, — American Purple Top Ruta-baga.

SERIES OF 1906. VOL. 19. NO. 2.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF JUNE, 1906.

DAIRY PROFITS.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

Approved by

The State Board of Publication.

Crop Report for the Month of June, 1906.

Office of State Board of Agriculture,
Boston, Mass., July 2, 1906.

Bulletin No. 2, Crop Report for the month of June, is herewith presented. At the close of this bulletin is an article on "Some Causes affecting Dairy Profits," by Prof. C. S. Cooley, professor of Animal Husbandry and Dairying at the Massachusetts Agricultural College. This article contains a great deal of valuable matter which should interest every owner of dairy cows, regardless of the line of dairying of which he makes a specialty, and we trust that it will receive the careful attention on the part of our readers which its merit deserves.

Progress of the Season.

Preliminary returns to the Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture (Crop Reporter for June, 1906) on the acreage of spring wheat sown, indicate an area of 17,989,000 acres, an increase of 38,000 acres, or .2 per cent, as compared with the estimate of the acreage sown last year. The average condition of spring wheat on June 1 was 93, as compared with 94 last year, 93 on June 1, 1904, and a ten-year average of 94. The average condition of winter wheat on June 1 was 83, as compared with 91 on May 1, 1906, 86 on June 1, 1905, 78 on June 1, 1904, and a ten-year average of 81.

The total reported area in oats was about 27,678,000 acres, a decrease of 368,000 acres, or 1.3 per cent, as compared with the estimated area sown last year. The average condition of oats on June 1 was 86, against 93 on June 1, 1905, 89 in 1904, and a ten-year average of 91.

The acreage reported as under barley is more than that estimated as sown last year by about 133,000 acres, or 2.7

per cent. The average condition of barley is 93.5, against 94 on June 1, 1905, 90 in 1904, and 90, the mean of the corresponding averages of the last ten years.

The average condition of rye is 90, against 94 on June 1, 1905, 86 on June 1, 1904, and 90, the mean of the corresponding averages of the last ten years.

The total area planted to cotton is estimated to be about 28,686,000 acres, an increase of 1,686,000 acres, or 6.2 per cent. This increase is not, however, all of this year, last year's acreage evidently having been considerably underestimated.

In Massachusetts the acreage of oats compared with that sown last year was given as 99, and the average condition June 1 as 97; the average condition of rye as 91; the acreage of clover compared with that of last year as 100, and its average condition as 98; the average condition of alfalfa as 90; the average condition of spring pasture as 94; the average condition of apples as 90; the average condition of peaches as 85; the average condition of blackberries as 95; the average condition of raspberries as 90; the average condition of cantaloupes as 90; the average production of asparagus compared with a full crop as 90; the average condition of cabbage as 95; and the average condition of onions as 95.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending June 4. — In the Rocky Mountain region and to the westward the week was cooler than usual, except on the extreme north Pacific coast. The temperature was also below the normal in the Missouri, central Mississippi and Ohio valleys, over the greater part of the Lake region, and in northern New England. In the Lake region, upper Ohio, upper Mississippi, and central Missouri valleys, over the greater part of the South Atlantic and east Gulf States, and on the west Gulf coast, the rainfall was below the average. There was also less than the usual precipitation in Colorado and the southern Plateau region. Unusually heavy rains occurred in the upper Missouri valley, and there was

more than the average rainfall in the Atlantic coast districts northward of Virginia.

Week ending June 11. — In the northern Rocky Mountain region, and the middle and northern Plateau and Pacific coast districts the week averaged cooler than usual. Over the southeastern Rocky Mountain slope, the Missouri valley, west Gulf States, and in all districts east of the Mississippi River, except extreme southern Florida, the week was warmer than usual. In the lower Missouri, central Mississippi, and upper Ohio valleys and over most of the Lake region, Middle Atlantic States, and New England, the rainfall exceeded the average and in portions of all districts named was very heavy. In the central Missouri and lower Ohio valleys and generally throughout the Southern States the precipitation was below the average.

Week ending June 18. — The week averaged cooler than usual over the interior of northern California, on the north Pacific coast, and in nearly all districts east of the Rocky Mountains. The deficiency in temperature ranged from 3° to 6° per day, the most marked departures occurring in the central Mississippi and lower Ohio valleys, the southern portion of the Lake region, and the interior portions of the Middle Atlantic States and New England. Generally throughout the Atlantic coast districts, including the upper Ohio valley and the greater part of the east Gulf States the rainfall was much above the average. From the Gulf coast northward to the Lake region the precipitation was much below the average.

Week ending June 25. — The week averaged warmer than usual along the south Atlantic, Gulf, and Pacific coasts. Over the eastern portion of the lower Lake region the average daily temperature for the week was nearly normal. Elsewhere the week averaged cooler than usual, being decidedly cool on the northern New England coast and from the upper Ohio valley westward to the central and northern Plateau regions. Throughout the central valleys the average daily temperature deficiency amounted to 6° or more, and in the northern Rocky Mountain region and upper Missouri valley it ranged from 9° to 12°. The rainfall was

below the average in the southern portion of the Lake region, the northern portions of Indiana and Illinois, and in northwestern Ohio, also on the southern New England coast and generally throughout the Southern States. Very heavy rains fell in the lower Missouri, central Mississippi, and Ohio valleys, Middle Atlantic States, and over the greater portion of New England.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending June 4. — New England. Boston: There was much cloudy weather, with frequent showers. Thunderstorms were general, and in places severe on the 6th and 9th. The sunshine was below the average. The temperature was seasonable.

Week ending June 11. — New England. Boston: The temperature was low during the fore part of the week and seasonable the latter part. The sunshine was normal. Hail occurred in some places June 1. The rainfall was ample.

Week ending June 18. — New England. Boston: Showers occurred Saturday, Sunday and Monday. The temperature was moderately low at the beginning and close of the week, light frosts occurring in the northern and interior parts on the 13th and 14th.

Week ending June 25. — New England. Boston: Showers occurred at the beginning and the close of the week, the middle portion being fair. The rainfall in the northeast and southeast portions was light, but ranged from 1 inch to 2 inches in southwest Maine, southern New Hampshire, Vermont and central-western Massachusetts.

The Weather of June, 1906.

The month opened with several days of generally fair and seasonal temperatures, during which there was a normal amount of sunshine. The weather became unsettled on the 5th, and a period of showery conditions prevailed from the 6th to the 10th. The rainfall during this time was copious though not excessive: it was wholly from thunderstorms

and local disturbances, and therefore somewhat unevenly distributed. In coast sections the amounts of rainfall ranged from .30 to .60 of an inch, while in northwestern parts of the State they, in numerous instances, exceeded an inch. The temperatures during the time were near the seasonal average, the maxima ranging in the 80s and the minima in the 50s. From the 11th to the 18th there was generally fair weather with abundant sunshine. There was little change in the temperatures, although the general tendency was to moderately cooler weather. The sunshine coming after a rather prolonged season of cloudiness was very beneficial. During the closing decade of the month the weather conditions were characteristic of the season. The rainfall was light, the result of local storms and showers and therefore irregular in distribution. While no marked rise occurred in the temperatures over the State, the average for this period was nearer the normal for the season than during the preceding ten days. The local storms during June were less violent than usual, and there was probably less damage from this source than often occurs in this month. The month as a whole was quite pleasant, but at the close the season was generally considered to be a week or ten days later than the average.

In the circular to correspondents, returnable June 25, the following questions were asked : —

1. What insects are proving injurious in your locality?

2. How is Indian corn looking, and what is the acreage as compared with former years?

3. How is haying progressing, and what is the prospect for the crop?

4. Will the acreage of forage crops be increased in your locality?

5. How does the acreage of early potatoes compare with previous years, and what is the promise for the crop?

6. How do early market-garden crops compare in yield and price with former years, and what is the prospect for those not yet harvested?

7. How do the quantity and quality of dairy products,

and the supply and price of dairy cows, compare with former years?

8. What is the condition of pasturage in your locality?

9. What is the outlook for such fruits and berries as are grown for market, naming them?

Returns were received from 158 correspondents, and from these returns the following summary has been made up: —

Insects.

Insects appear to be unusually prevalent, although the damage reported as done by them was not excessive in any case. Potato bugs are the insects most commonly reported, with cut worms a close second; over a third of the correspondents reporting damage from cut worms, — an unusually large proportion. Rose bugs and squash bugs, both the black and the striped varieties, also appear to be more numerous than usual. Only 2 correspondents report damage from canker worms and but 5 from tent caterpillars; while 9 speak of the brown-tail moth caterpillars and 5 of the gypsy moth caterpillars. Other insects reported as doing damage are currant worms, wire worms, white grubs, onion maggots, elm leaf beetles, spittle insects, cabbage flies, spiny elm caterpillars, cranberry vine worms, asparagus beetles, Hessian flies, the San José scale, cattle flies, the plum curculio and the army worm.

Indian Corn.

Indian corn was in the main planted rather later than usual, owing to cold weather during May, and this, with cool weather since its germination, makes the crop late, probably from ten days to two weeks, at the time of making returns. With seasonable weather it should soon make up for this deficiency in growth, as the stand is reported to be good and the crop thrifty, with good color. There would appear to be a decrease in acreage over last year, due in a large measure to the delay in planting.

The Hay Crop.

Haying had hardly begun at the time of making returns, and the crop generally had not secured its full growth, owing to cold weather and lack of rain in May, which prevented it starting early. The wet weather of the latter part of May and of June has tended to improve the crop materially, but a few days of warm weather are needed to bring it to maturity. Haying should be well under way by the first week in July, and correspondents in general appear to expect a good crop, although a few report injury from heavy frosts and from the early dry weather, from which they do not expect the crop to fully recover.

Acreage of Forage Crops.

There will not be a special increase in the acreage of forage crops this year, judging from the returns, but there is an undoubted tendency to raise more of these crops for soiling purposes, as our New England pastures cannot be depended upon for a steady supply of feed throughout the season. A favorite combination for partial soiling in this way is oats and peas for early feed, followed by Japanese millet, fodder corn and barley in the order named.

Early Potatoes.

There is no material change in the acreage of early potatoes, falling off of acreage in certain sections being balanced by increases in others. The crop is somewhat later than usual, owing to cool weather, but germinated well in most cases, and the vines are now looking well. It is too early, however, to make any definite predictions as to yield.

Early Market-garden Crops.

Early market-garden crops were generally later than usual in reaching the market, cool weather operating to hold them in check, together with all other crops. Prices appear to have been rather higher than for some years. Asparagus and peas both yielded well and have brought good prices. Later market-garden crops have made good growth and now promise well.

Dairy Products and Dairy Cows.

The flow of milk has been well maintained, judging from the reports, and dairy products of all kinds are therefore in good supply. Milk, butter and butter fat all appear to bring about the same prices as in former years, though butter and butter fat are perhaps somewhat lower than the high mark of last year. Dairy cows appear to be in fair supply, and prices are somewhat easier than of late years. First-class cows will always command first-class prices and find a ready sale.

Pasturage.

Pastures were never in better condition the latter part of June than they were at the time of making returns. The frequent rains had kept them green and growing and feed was abundant. There was some complaint as to quality of feed, but this was by no means general.

Fruits and Berries.

Strawberries have been a good crop in all sections and an unusually heavy one in some. Reports from southern Bristol and Plymouth counties, the great commercial center for this crop, indicate that the crop has been unusually heavy and prices correspondingly low. From other sections prices are reported as higher than usual, and the Boston markets by no means reflect the situation reported above. Raspberries and blackberries generally wintered well, bloomed freely and promise good yields. Currants also generally promise well. There has been more or less injury to cherries, plums and pears from late frosts, and none of these crops promise to be unusually heavy in any section, while in some cases one or more of them are reported to be total failures. Peaches also suffered from frosts, but have set fairly well in most sections, and a fairly good crop is promised, though nothing like that of last year. Apples promise well in most sections, though there are some reports of shy bearing on the part of Baldwins. The "June drop" was not completed at time of making returns, and something will depend on its severity. Cranberries generally appear to have bloomed well.

NOTES OF CORRESPONDENTS.

(Returned to us June 25.)

BERKSHIRE COUNTY.

Tyringham (Edward H. Slater). — Potato bugs are doing the most damage of any insect. Indian corn is looking well, with acreage fully up to previous years. No haying has been done as yet, but the prospect for the crop is good. There will be no increase in the acreage of forage crops in this locality. There is about the usual acreage of early potatoes and the crop promises well. The quantity and price of dairy products compare favorably with previous years. The recent rains have helped out the pastures. There will be no plums; cherries and small fruits are looking well.

Lee (A. Bradley). — Potato bugs were never more plenty. Indian corn is looking finely with acreage fully up to the normal. Haying will not commence until July, but the crop promises to be fully normal. The acreage of forage crops is considerably increased. There is a larger acreage of early potatoes than usual and they never looked better. Quantity and price of dairy products fully up to the average; dairy cows a little higher than usual. Pasturage is in first-class condition. Fruits and berries are little grown for market.

Washington (E. H. Eames). — Potato bugs are doing some damage. Corn is two or three weeks later than usual, with acreage about the same as last year. No haying has been done, but the prospect is the best for two or three years. The acreage of forage crops will be about the same as usual. The acreage of early potatoes is the same as last year and the crop promises to be good. The quantity and price of dairy products and supply and price of dairy cows are about the same as in former years. Pasturage is in splendid condition. Fruits and berries are not grown for market.

Stockbridge (F. A. Palmer). — Indian corn is backward on account of cold weather; acreage about normal. Very little hay has been cut as yet and the prospect for the crop is only fair. The acreage of forage crops will be slightly increased. The usual acreage of early potatoes has been put in, and they look well but are late. Cows are high in price and the market well supplied with dairy products at good prices. Pastures are in fine condition. Berries are looking finely.

Hancock (B. H. Goodrich). — Insects have done no particular damage. Acreage of Indian corn about the same as usual, but it is

rather backward. There will be no change in the acreage of forage crops. There is about the same acreage of early potatoes as last year and they are looking well. The quantity and price of dairy products and price of dairy cows are rather better than usual. Pasturage is in excellent condition. Fruits and berries are not grown for market.

Peru (F. G. Creamer). — Potato bugs are doing some damage. Corn is looking well, with about the usual acreage. Grass looks finely, and the prospects are that there will be a large crop of hay. The acreage of forage crops will not be increased. There is more than an average acreage of early potatoes and they are looking well. Butter fat is selling for three cents a pound above the price last year; good cows scarce. Pasturage is looking well.

Windsor (H. A. Ford). — Potato bugs are doing some damage. Indian corn is looking quite well and the acreage is increased one-fourth. The prospect for the hay crop is good. The acreage of forage crops will be increased in this locality. There is no change in the acreage of early potatoes and they are looking well. The quantity and price of dairy products and supply and price of dairy cows are about normal. Pasturage is in good condition. Strawberries are looking well.

Savoy (W. W. Burnett). — Potato bugs are very prevalent. Corn looks fairly well, but was mostly late planted, and is consequently small for the season. Haying has not begun, but it is expected that the crop will be light. There is about the usual acreage of forage crops. There is an increased acreage of early potatoes and they are now looking fairly well. Quantity and price of dairy cows and supply and price of dairy products fully average with former years. Pastures are in fine condition and there is a surplus of feed. Not much is done here with fruits and berries.

FRANKLIN COUNTY.

Rowe (N. E. Adams). — Indian corn is looking poorly, with about the usual acreage. No haying has been done as yet and the crop will be below the average. The acreage of early potatoes is about the same as last year, but promises to be a little later. The quantity and price of dairy products and supply and price of dairy cows are about the same as usual. Pastures are in good condition. Plums, pears and strawberries are in very good shape. Hay on new land is good, but old mowings are very poor.

Leyden (U. T. Darling). — There is but little damage from insects as yet. Indian corn is looking well, but is small; acreage about the same as usual. But little haying has been done. The acreage of forage crops will not be much increased. Early market-garden crops are looking well and bring good prices; prospect good for later ones. Cows are a little lower in price, also dairy products. Pasturage is in good condition. Strawberries are doing well, and raspberries promise well.

Bernardston (R. H. Cushman). — Some complain of an unusual number of small, black flies on potatoes. Acreage of Indian corn fully

average, and they are looking very well, though somewhat late. There will not be a large crop of hay and it is very uneven in growth. The acreage of forage crops will be increased. There is about the usual acreage of early potatoes and they are looking well. Our farmers have made a mistake in breeding out of the dairy type of cow. Pasturage is looking well. Apples will be a very light crop; berries full yields. Prices for butter and cream are low. Dairy cows sell at profitable prices.

Ashfield (CHARLES HOWES). — Potato bugs are doing some damage. Corn is very backward on account of cold weather, with about the usual acreage. But very little haying has been done. There will be about the usual acreage of forage crops. Potatoes are looking finely, with a slight increase in acreage. Dairy products are fully up to the average; good cows are not plenty, but prices are a little lower than usual. Pastures are in very good condition. Baldwin apples are very light, but other varieties promise a fair yield; pears, peaches and plums light.

Whately (FRANK DICKINSON). — Cut worms and wire worms are doing some damage. Indian corn is backward with about the average acreage. No haying has been done as yet, but a good crop is promised. The acreage of forage crops will be slightly increased. There is about an average acreage of early potatoes, but the outlook is good. Early market-garden crops are rather below average in yield and price, but later ones promise well. Dairy products are above average in price and dairy cows bring full prices. Pasturage is short, but is green and good. The outlook for fruits and berries is poor, they having suffered from late frosts.

Montague (A. M. LYMAN). — Cut worms and potato bugs are doing some damage. Corn is not as forward as usual, but promises a good crop; acreage larger than usual. No haying has been done as yet, but there will be a fair crop. The acreage of forage crops will be considerably increased. There is about the usual acreage of early potatoes and they are looking well. Early market-garden crops are up to the average in yield and price and the prospect is good for later ones. Dairy products have held up well in yield and price. Pastures are in better condition than usual. Strawberries were blighted by frost in early bloom; peaches are a failure; raspberries promise well; plums and cherries partial crop; grapes in full bloom.

Wendell (N. D. PLUMB). — Tent caterpillars, cut worms and potato bugs are doing some damage. Corn is somewhat backward, and the acreage is only about three-fourths that of last year. Haying will not begin until after July 4, but prospects are good for a large crop. The acreage of forage crops will not be increased. Owing to the late spring, but few early potatoes were planted, but they look promising. There is no noticeable change in prices of dairy cows and dairy products from former years. Pasturage is in good condition. Blueberries promise a large crop; strawberries winter-killed badly.

Northfield (T. R. Callender). — Potato bugs are numerous, and striped bugs are doing some damage to cucumbers. Indian corn is rather late, but is looking well; acreage fully up to the average. Haying has only just begun; prospects excellent. There is about the same acreage of forage crops as last year. There is an average acreage of early potatoes, and they are rather late but looking well. Prices are high for both dairy cows and dairy products. Pastures never looked better. Strawberries are looking well.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — Cut worms have done considerable damage. Corn is a little backward, but has good color and stand; acreage about the same as usual. Haying has not yet commenced, but there will be a fair crop. The acreage of forage crops will not be increased. But few early potatoes are planted, but late ones are looking fairly well. The quantity and price of dairy products and the supply and price of dairy cows are about the same as usual. Pasturage is in excellent condition. There will be but few apples, owing to late frosts.

Amherst (Wm. P. Brooks). — Cut worms, onion maggots and the San José scale are doing some damage. Indian corn is looking well, with acreage unchanged. Haying is just beginning and the crop is unusually heavy. The acreage of forage crops will not be increased. There is no substantial change in the acreage of early potatoes, and they promise exceptionally well. Quantity and price of dairy products and supply and price of dairy cows about as usual. Pastures are in excellent condition. Strawberries, raspberries, blackberries and currants are full average crops or better; apples uneven; peaches and plums promise well.

North Hadley (H. C. Russell). — Wire worms, cut worms and elm leaf beetles are present, but not doing serious damage. Acreage of Indian corn normal and crop looking well. No haying has been done as yet but the crop promises well. There will be no increase in the acreage of forage crops. Early potatoes are average crops and looking well. Early market-garden crops are about average in yield and price. There is a full supply of cream, with prices about as usual. Pasturage is in good condition. Strawberries are a good crop and are selling well; few blackberries and raspberries. Tobacco setting is completed and the rains have started the crop well.

South Hadley (W. F. Person). — Potato bugs and rose bugs are doing some damage. Corn is late and does not look very well, owing to wet and cold weather. No haying has been done as yet, but the crop promises well. The acreage of forage crops will not be increased to any great extent. More potatoes have been planted than in previous years, and they are looking well though late. Market-garden crops look well and prices are about the same as last year. Dairy products about average in price and in good supply; prices average for dairy cows.

Pastures are in good condition. Cherries are plentiful; pears plenty; apples a short crop.

Southampton (C. B. Lyman). — Potato bugs are the only insect doing damage. Indian corn is looking fairly well, and a few warm days would make a great change in it. The hay crop promises to be good, but cutting has not begun. The acreage of forage crops will not be increased. The acreage of early potatoes is not more than normal and they are looking well. There is no great change in the quantity or price of dairy products; dairy cows are in good demand. Pastures have improved and are looking fairly well.

Westhampton (H. A. Parsons). — Potato bugs and currant worms are doing some damage. Indian corn is late, with about the usual acreage planted. Haying will commence next week and the crop promises well. The acreage of forage crops will not be increased. The quantity of dairy products is about the same as usual, but butter is from three to five cents per pound higher than last year. Pasturage is in good condition. There are no strawberries here this year; blueberries and high-bush blackberries promise well.

Chesterfield (Horatio Bisbee). — Potato bugs are very troublesome, and cut worms are giving some trouble. Corn looks fairly well, less being planted than usual for the silo and more for grain. Haying has not yet commenced, but the prospect for the crop is good. The acreage of forage crops will not be increased. Dairy cows and dairy products are bringing good prices. Pastures are in good condition. Fruits and berries are not grown here for market.

Cummington (S. W. Clark). — Insects are doing little damage. Corn is vigorous but a little late; acreage about the same as usual. Very little haying has been done, but a heavy crop is hoped for. The acreage of forage crops will not be increased. More potatoes have been planted than usual, but it is too early to judge as to the yield. Quantity of dairy products same as last year, prices lower, but above Boston's highest quotations. Dairy cows sold a little lower this spring than last. Pasturage was never better. No fruits or berries ready for market yet, but outlook normal.

HAMPDEN COUNTY.

Tolland (Eugene M. Moore). — Potato bugs and squash bugs are doing some damage. Indian corn is looking well though a little late and about the usual acreage has been planted. The present prospects indicate a good crop of hay. The acreage of forage crops will be larger than usual. Early potatoes are looking finely. Dairy cows are scarce and high in price. Feed in pastures is unusually good, owing to recent rains. The apple crop will be light.

Blandford (Enos W. Boise). — Potato beetles and cut worms are doing damage and cattle flies are very numerous. Indian corn has a very good color and stand, but is small owing to late planting; acreage about normal. Hardly any haying has been done and an average

crop is in prospect. Acreage of early potatoes about the same as usual. Dairy products are a little below last year in price, but about average; no call for cows and where sold they are low in price. Pasturage is in fair condition, but is not up to the average. No fruits and berries are grown for market, but wild berries promise full crops.

Southwick (L. A. Fowler). — Cut worms and potato bugs are doing some damage. Corn is looking well, with about the usual acreage. Haying has not yet commenced, but a good crop is promised. The acreage of forage crops will not be materially increased. Acreage of early potatoes about the same as usual and they are looking well. Early market-garden crops are average in yield and price. Dairy products and dairy cows are both a little higher than in former years. Pastures are in good condition. Apples plenty; blackberries, cherries and all fruits good. Tobacco setting is finished and the crop looks very well.

West Springfield (N. T. Smith). — Cut worms, wire worms and onion maggots have all been unusually troublesome. Corn looks well but is backward; acreage average. But little grass has been cut as yet, and there is prospect of an average crop. There will be little change in the acreage of forage crops. The acreage of early potatoes is slightly increased, and they do not promise an average yield. Early market-garden crops are about normal and later ones are growing well. Dairy products are fully up to the last few years in quantity and price. Pasturage is in very good condition. Apples light; pears full; peaches below average; raspberries, blackberries and grapes promise full crops; strawberries a good crop, with fair prices.

East Longmeadow (John L. Davis). — Potato bugs, wire worms and cut worms are doing some damage. Indian corn is a little late but came up well; acreage increased one-fourth. Haying is just commencing with an average crop. The acreage of forage crops will not be increased. Potatoes are about an average acreage, but came up poorly and late. Price of early market-garden crops about the same as last year; prospect good for later ones. Not much change from last year in supply and price of dairy products and dairy cows. Pastures are in very good condition. Strawberries excellent; peaches good; apples fair; pears fair.

Hampden (John N. Isham). — Corn is looking well with a full acreage. Haying has not commenced, but the prospect is generally good. Forage crops are annually increasing in acreage. The usual acreage of early potatoes has been planted, but they came up very unevenly. Yield and prices of market-garden crops compare finely with other years; later crops growing finely. Dairy products are about average in quantity, but prices are a little better than last year; cows in good demand at full prices. Pasturage is in fine condition. Strawberries are a prolific crop; apples, peaches and currants promise well.

Palmer (O. P. Allen). — Cut worms have done some damage. In-

dian corn is very backward and some fields have been replanted; about the usual acreage. Little haying has been done, but there is a good crop in prospect. There is little change in the acreage of forage crops. The acreage of early potatoes is about the same as usual, with fair promise of a good crop. Early market-garden crops are much later than usual, so that harvest has hardly begun. There is very little change in the quantity or price of dairy products. Abundant rains have brought pasturage into fine condition.

Holland (F. Wight). — Potato bugs are doing some damage. Corn is looking fairly well, but is a little backward; acreage slightly increased. No hay has been cut as yet, but some pieces will give good crops. The acreage of forage crops will be about the same as in other years. Early potatoes are looking well, with about the usual acreage. Dairy products are the same as other years in quantity and price, and dairy cows are about the same in price. Pasturage is looking and doing well.

WORCESTER COUNTY.

Warren (W. E. Patrick). — Potato bugs, rose bugs and cut worms are doing some damage. Indian corn has good color, but is very small; about the usual acreage. No haying done as yet, but prospect good for an average crop. There will be about the usual acreage of forage crops. There is no noticeable change in the acreage of potatoes and they are looking well. Pasturage has improved much with recent rains, but is not fully up to the average for the time of year. Strawberries are a full crop; blackberries promise well; currants fair; apples and peaches well set; plums poor.

New Braintree (C. D. Sage). — Some fields of grass are badly infested with spittle insects. Corn is mostly grown for fodder or the silo; acreage fully as large as usual and looking well. Very little haying was done June 25th, but the prospect is good for a large crop. The acreage of forage crops is about the same as usual. There is about the usual acreage of early potatoes and they are looking well. Very little is done in market-gardening. Quantity of dairy products as large as usual, price the same; cows not very plenty and prices fair. Pastures are in excellent condition. There will be few Baldwin apples; other varieties fair.

Dana (Lyman Randall). — Cut worms, potato bugs, currant worms, rose bugs and cabbage flies are doing damage. Indian corn is backward, owing to late planting and cool nights; about the same acreage as usual. But little haying done as yet, but the crop will be good. The acreage of forage crops will not be much increased. The acreage of early potatoes is not as large and the vines are not as thrifty as usual. Market-garden crops are late, but with warm weather will be fairly good. Quantity and price of dairy products about as last year; dairy cows higher in price. Pasturage is in good condition. All kinds of fruit will be light, owing to heavy frosts.

Petersham (B. W. Spooner). — Cut worms and potato bugs are doing some damage. Planting was delayed by wet weather, but corn is doing well, with about the usual acreage. Haying will be late; none cut as yet, but the crop looks finely. There will be about the usual acreage of forage crops. Early potatoes are looking finely, especially early planted ones. Early market-garden crops are about as usual in yield and price. Price of dairy products the same as for the past three years. Pastures were never in better condition at this time of year. Fruits and berries are little grown for market, but the fruit crop is not encouraging.

Phillipston (A. D. Clifford). — Potato bugs and cut worms are very plentiful this season. Indian corn is very backward in this section. Haying has not begun but grass is looking well. There will be about the usual amount of forage crops grown. The acreage of potatoes is less than usual, but they are looking well. The yield and price of early market-garden crops is average, but maggots are destroying early cabbages. Dairy butter is plentiful and lower in price than last year. Pasturage is in perfect condition. Blueberries are going to be quite plentiful; there will be a fair crop of apples.

Ashburnham (E. D. Gibson). — No insects are doing particular damage. Corn looks well, but is not as forward as usual. Grass is ten days late, but is growing finely. The acreage of forage crops will not be increased. There is about an average acreage of early potatoes. Prices of dairy products a little low, quantity about average; price of cows about as usual. Pasturage is seldom in as good condition as now. No fruits and berries grown especially for market, but berries of all kinds promise well.

Princeton (A. V. Tyler). — Rose bugs and potato bugs are doing some damage. Indian corn is looking well but is a little backward; acreage about the same as usual. Haying not begun as yet, prospect for crop best in years. The acreage of forage crops will probably not be increased. Price of milk the same as formerly; dairy cows scarce and high. Raspberries, blackberries, currants, good; pears and apples fair outlook; some plums; no peaches.

Sterling (Henry S. Sawyer). — Potato bugs are doing some damage. The corn crop is late; acreage about the same as last year. Clover and orchard grass are being hayed. Forage crops are increasing in acreage from year to year. There is about an average acreage of early potatoes and they promise a good crop. Very few early market-garden crops raised; prospect good for later ones. Milk, 28 cents per can; butter, 30 cents per pound; good dairy cows scarce, $50 to $65. Pastures are looking well; feed good. Blackberries, raspberries and currants promise a good crop; very few strawberries raised.

Bolton (H. F. Haynes). — Potato bugs are doing some damage. Indian corn is looking very poorly; acreage about normal. Haying has not begun, but the crop looks well. The acreage of forage crops will probably be increased, as corn is such a poor crop. Acreage of

early potatoes about the same as last year, but they came up poorly and do not look well now. There is not much change in the quantity and price of dairy products or the supply and price of dairy cows. Pasturage is good now but was very poor before the rains. Frost damaged strawberries one-third; blackberries promise a big crop.

Shrewsbury (Fred J. Reed). — Cut worms, potato bugs and onion maggots are doing some damage. Corn is looking very well; acreage about the same as usual. No haying done as yet, but there is prospect of a large crop. The acreage of forage crops will not be increased to any extent. There is about the usual acreage of early potatoes and a good crop is promised. Yield of market-garden crops extra good; price about the same as usual; prospect good for later ones. Dairy products are about the same as usual in quantity and price; price of cows high. Pasturage is in very good condition. Outlook for fruits and berries very good.

Southborough (Edward F. Collins). — Potato bugs are more numerous than usual. There is about the usual acreage of Indian corn, and there is a good stand, which is looking finely. Haying has just begun with a large crop. The acreage of forage crops will be rather less than usual. There is about the usual acreage of early potatoes and they promise well. All early market-garden crops are looking well, but are a little late. Dairy products and dairy cows about the same as in former years in supply and price. Pastures are improving and feed is very good now. Apples and peaches will be smaller yields than last year.

Auburn (Wm. Gilbert). — Potato bugs and squash bugs are very plentiful. Indian corn is looking well, but is rather backward. There is about an average crop of hay. The acreage of forage crops will not be increased. The acreage of potatoes is below normal, but promises well. Garden truck is about normal in yield and price. Milk is flush and the price is the same as for the last two years; milch cows scarce and high. Pastures are in extra good condition. There will be about half a crop of apples; pears and strawberries full yields.

Blackstone (O. F. Fuller). — Cut worms have done considerable damage. Corn is in fair condition, with about an average acreage. Haying is progressing slowly, but there will be an average crop. There will not be an increase in the acreage of forage crops. The acreage of early potatoes is about the same as usual and the crop promises well. Early market-garden crops promise well. Pasturage is in average condition. Apples set well, with a good prospect of a good pear crop, and a few plums; grapes and small fruits looking well.

MIDDLESEX COUNTY.

Sudbury (E. W. Goodnow). — Potato bugs and squash bugs are proving injurious. Indian corn is looking well and the acreage is about normal. Very little haying has been done, but the prospects are favor-

able for a good crop. The acreage of forage crops will be increased in this locality. The acreage of early potatoes is larger than usual and a good crop is promised. Early market garden crops compare well with former years in yield and price. Quantity and price of dairy products the same as in former years and dairy cows are more reasonable in price. Pasturage is in good condition. Apples, peaches, pears and plums are looking well.

Maynard (L. H. Maynard). — Potato bugs, rose bugs, cut worms and a few brown-tail and gypsy moths are doing damage. Corn is backward owing to the late season, but is looking well. Haying has not commenced, but a good crop is in prospect. There will be about an average acreage of forage crops. Potatoes are about a normal crop and promise well, but are late and were slow in coming up. Market-garden crops are looking well, and prices are a little better than for some years. Dairy products are about average in quantity and price; good cows bring good prices. Pastures are looking well, owing to recent rains, and feed is abundant. Apples three-fourths of a full crop; pears, grapes and nearly all fruits promise well.

Westford (J. W. Fletcher). — Potato bugs are doing some damage. Corn is looking very well for the season; acreage about the same as usual. Haying has not begun; prospect for a good crop. The acreage of forage crops will be about the same as usual. Acreage of early potatoes about the same as usual and they promise a good crop. Condition of pasturage good. The outlook for fruits and berries is good.

Townsend (G. A. Wilder). — Brown-tail moth caterpillars and cut worms are doing some damage. Indian corn is in fine condition; acreage about the same as usual. There will be a good crop of hay. The acreage of forage crops will not be increased. There is about the usual acreage of early potatoes and they promise a fair crop. Early market-garden crops are about average in yield and price, with a good prospect for later ones. Quantity and price of dairy products and supply and price of dairy cows about as usual. Pastures are in good condition. Fruits and berries will give light yields, owing to late frosts.

Dunstable (A. J. Gilson). — Potato bugs, rose bugs and wire worms are very numerous and destructive. Corn is looking well and the acreage is about the same as in previous years. Haying has not begun, but the prospect is that there will be a heavy crop. There is no increase in the acreage of forage crops. Early potatoes are raised for home use in small quantity. Dairy products and dairy cows are about the same as in previous years in supply and price. Pasturage is in good condition. Apples are the principal fruit raised for market and the outlook is for a light crop, and also the same for strawberries.

Tewksbury (Geo. E. Crosby). — Potato bugs, cut worms and rose bugs are doing some damage. Indian corn is not raised here. The prospect seems good for the hay crop, but none has been cut as yet. The acreage of forage crops will not be much increased. The acreage

of early potatoes is smaller than usual. Early market-garden crops are about average in yield and price. There is no material change in the quantity and price of dairy products and the supply and price of dairy cows. Pasturage is in first-class condition. Strawberries are an abundant crop.

Carlisle (E. J. Carr). — Potato bugs and brown-tail moth caterpillars are very plentiful. All corn is backward with an increased acreage. Not much hay has been cut, but there is the prospect of a large crop. Early potatoes look well, with an increased acreage. Asparagus has yielded well and later market-garden crops look well. Quantity and price of dairy products about the same as for the last two years. Pastures are in the best of condition. Strawberries and early apples look well; blackberries blossomed well.

Lincoln (C. S. Wheeler). — Potato bugs, gypsy moth caterpillars and cut worms are doing some damage. Indian corn is about average in condition. Little grass has been cut as yet; prospect for less than an average crop. There is an average acreage of early potatoes, with fair prospects for the crop. Early market-garden crops are better than average and prices good; strawberries less than average. Milk average in quantity and price the same as last summer; good cows scarce as usual. Pastures are in fair condition. Apples promise not more than an average crop; plums fair; blackberries looking well.

Stoneham (J. E. Wiley). — Currant worms are doing some damage. Haying has commenced with a good crop. There is about the usual acreage of early potatoes and they promise well. Early market-garden crops made average yields, with prices higher than usual, asparagus being much higher, and later crops promise well. Pasturage is in good condition. Grapes and strawberries good crops.

Arlington (W. W. Rawson). — Market-garden crops are good and bring good prices. It looks like a good market all the season.

Weston (Henry L. Brown). — Gypsy moths and cut worms are doing damage. Indian corn is not much raised. Haying has just commenced; new fields good, old ones very light. There is about the usual acreage of forage crops. The acreage of early potatoes is much less than usual and they are not looking well. Yield of early market-garden crops average, also prices; later ones promise well. Price of milk the same as last year; cows very high. Pasturage is in good condition. Strawberries are rotting; other berries promise well.

ESSEX COUNTY.

Amesbury (F. W. Sargent). — Brown-tail moth caterpillars, tent caterpillars and potato bugs are doing damage. Indian corn is backward. No haying has been done as yet, but the prospect is generally good. The acreage of forage crops will probably be about the same as usual. There is an average acreage of early potatoes, but it is too early to judge as to the yield. Yield of early market-garden crops not

equal to the average, and all are backward. Dairy products bring fair prices; good cows high. Pasturage is making rapid growth, but needs warmer weather for quality. Many strawberry blossoms failed to set fruit, and the vines are rusting. Apples promise nearly a full crop.

Andover (Milo H. Gould). — Cut worms and striped squash bugs are doing some damage. Corn is quite small, acreage about the same as usual. Little haying has been done, but the prospect is good for the crop. The acreage of forage crops will not be increased. Acreage of early potatoes about the same as usual, and they promise well. There will be an average crop of market-garden crops, and prices are good. Quantity and price of dairy products about the same as usual; also of dairy cows. Pasturage is in good condition. Strawberries are doing well where not destroyed by cut worms last fall.

Newbury (G. W. Adams). — Brown-tail moth caterpillars are doing some damage. Indian corn is in average condition, except that it is a few days late. The prospect is good for the hay crop, but cutting has not begun as yet. The acreage of forage crops will not be increased. There is about an average acreage of early potatoes, with possibly a very slight increase, and they are in good condition. Market-garden crops are very late. Quantity of dairy products excessive and prices low. Pasturage is in excellent condition. Except for apples the outlook for fruit is far from good.

Rowley (D. H. O'Brien). — Brown-tail moths, canker worms, onion maggots, rose bugs and flea beetles are doing damage. Owing to excessive rain, most of the corn has been planted but a short time, and the acreage is smaller than in previous years. Haying has hardly commenced, but the prospect for the crop is good. The acreage of forage crops is to be increased. Acreage of early potatoes normal, but a smaller crop than usual is looked for on account of heavy rains. Early market-garden crops compare favorably with other years in yield and price; prospect good for later ones. There is little difference in yield and price of dairy products with other years. Pastures are in extra good condition. Apples medium, peaches good, pears scarce, strawberries medium, blueberries good.

Topsfield (B. P. Pike). — There are more or less gypsy moth caterpillars doing damage. There is very little corn raised except for the silo. There is every prospect of a good crop of hay. The acreage of forage crops will not be increased. The acreage of early potatoes is about average and they are looking well. No market-garden crops are in the market as yet. Quantity of dairy products full average and prices same as last year. Pasturage is in very good condition. Strawberries good; wild berries looking well.

NORFOLK COUNTY.

Randolph (Rufus A. Thayer). — Squash bugs and cut worms are doing some damage. Indian corn is a little late, but is looking finely, with about the usual acreage. Very little grass has been cut and it is growing finely. There will be no increase in the acreage of forage crops. Early potatoes are looking very thrifty, with about the usual acreage. Market-garden crops show good yields, with fair prices. Yield and price of dairy products normal; good cows high. Pasturage is in very fine condition. Strawberries and raspberries good crops.

Canton (Edward V. Kinsley). — Corn is looking well, but is somewhat late; acreage about the same as usual. Haying is progressing slowly, on account of broken weather, with a fair average crop. There is no special increase in the acreage of forage crops. Acreage of early potatoes about as usual and crop looking well but late. Market-garden crops late and prices high. Milk plenty, price same as last year; full supply of cows at fair but not high prices. Pastures are in fairly good condition. Strawberries are grown to a considerable extent and the outlook for the crop is good, with prices fair.

Stoughton (Chas. F. Curtis). — Potato bugs are doing some damage. Indian corn is slightly backward, due to cold nights; acreage up to average. Haying has just commenced and there is prospect of a good crop. Forage crops will be the same acreage as usual. Early potatoes are growing finely and promise a good crop. Milk brings seven cents per quart and dairy cows from $50 to $65. Pasturage is in the best of condition. Strawberries are yielding a good crop.

Norwood (F. A. Fales). — Potato bugs are doing considerable damage to tomato plants. Indian corn is ten days late but is looking well; acreage one-fourth less than usual. There has been no haying done here as yet. The acreage of forage crops will be increased 25 per cent. There is about an average acreage of early potatoes, but the crop will be late. Early market-garden crops have given about average yields, but have brought higher prices than usual. Price for milk same as last year; dairy cows rather lower in price. Pastures are in good condition. Strawberries are a good crop here and bring rather higher prices than usual.

Bellingham (John J. O'Sullivan). — Cut worms and potato bugs are doing some damage. Corn is backward, with about the usual acreage. Haying is just commencing, with a medium crop. The acreage of forage crops will be very little increased. There is about the usual acreage of early potatoes and they are looking very well. Both yield and price of market-garden crops are and have been good. Quantity and price of dairy products is the same as for the last few years; supply short and price higher on cows. Pasturage is in good condition. Strawberries are a good crop.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — Currant worms, rose bugs, potato bugs and plum curculios are doing some damage. Corn is backward, with about the usual acreage, but it is not extensively grown. Very little haying has been done as yet, but the crop is probably an average one. The acreage of forage crops is about the same as usual. There is about the usual acreage of early potatoes and they are looking fairly well though backward. Very few market-garden crops have been marketed as yet. Prices about the same as in past years for dairy products and dairy cows. Pasturage is in good condition. Blackberries, currants and raspberries look well; pears medium; apples poor; peaches good; Japan plums fair; strawberries higher than last year.

Seekonk (John W. Peck). — Potato bugs, striped cucumber beetles, cabbage worms are doing damage. Very little corn is grown near here, but what there is looks well. The prospects are very good for an extra crop of hay. The milk producers grow considerable forage crops. The acreage of early potatoes is slightly increased, and some fields are looking finely, while on others the vines are small yet. Early market-garden crops are average in yield and prices received, and later ones promise well. There is little change in the supply and price of dairy products and dairy cows. Pasturage is in very good condition. Apples, pears and plums bloomed heavily and promise well; strawberries plenty and will nearly all mature.

Swansea (F. G. Arnold). — Potato bugs and rose bugs are doing some damage. Indian corn is looking very well, with about the usual acreage. Grass looks well on good meadows, old meadows light. The acreage of forage crops will not be increased. The acreage of early potatoes is increased and the vines now look well. Market-garden crops are about average in yield and price. Milk is plenty and price the same as last year; good cows scarce and high. Pasturage is in very good condition. Strawberries are plenty and prices low; peaches promise well; pears light.

Berkley (Rollin H. Babbitt). — Cut worms are doing some damage. There is about the usual acreage of corn, but it is rather backward owing to cool weather. Haying is just commencing, with about an average crop. The acreage of forage crops will be increased. The acreage of early potatoes is smaller than for several years and the crop bids fair to be a light one. Strawberries are very low in price. The prospect is not promising for market-garden crops. Quantity and price of dairy products about the same as for several years past. Pasturage is in very good condition.

Acushnet (M. S. Douglas). — Potato bugs are doing some damage. Indian corn is late, but the acreage is fully as large as usual. Haying is not commencing, but there promises to be a large crop. The acreage of forage crops will be increased to a small extent. There is a 25 per cent larger acreage of early potatoes than usual, and they promise to

give a large crop. Early market-garden crops are fully up to the normal in yield and price, except that peas are a short crop, and the prospect is good for later ones. Quantity and price of dairy products and supply and price of dairy cows normal. Pastures are in good condition. There is a big crop of strawberries, but prices are low; red raspberries large crop; black raspberries scarce. Oats are rusting badly on account of wet weather.

PLYMOUTH COUNTY.

Marshfield (John H. Bourne). — Cut worms are abundant, also canker worms, tent caterpillars, rose bugs, potato bugs and a few brown-tail moth caterpillars. Indian corn is a little better than in most years, with about the usual acreage. Haying is about to commence, and the grass crop was never growing faster than just now. The acreage of forage crops will not be increased. There is a little smaller acreage of early potatoes than usual, but the promise for the crop is excellent. Peas are now ready and are a good crop. There is a good demand for milk; cows are rather plenty, but extra good ones are always in demand. Pasturage is in very good condition. Apples and pears abundant; strawberries good where late frost was not heavy.

Pembroke (Nathaniel Morton). — Cut worms are doing some damage. Indian corn is about a normal crop; very little field corn raised here. The hay crop is better than last year, but not up to the normal. The acreage of forage crops will not be increased. There is a smaller acreage of early potatoes than usual, but the prospect for the crop is good at present. Yield of early market-garden crops less than usual, but prices high; prospect good for later ones. Quantity of dairy products less than usual, prices better, and price of cows much higher. Pastures are in better condition than usual. Strawberries are a good crop.

Bridgewater (R. Cass). — Potato bugs, rose bugs, squash bugs and cut worms are doing some damage. Corn is later than usual, with the acreage about as usual. Haying has hardly commenced, but there promises to be a good crop. The acreage of forage crops will be about as in former years. The acreage of early potatoes is about the same as usual, with the promise of a good crop. Market-garden crops are a fair average in yield, with prices about normal; prospect good for those not yet harvested. Quantity and price of dairy products and supply and price of dairy cows about as in former years. Pastures are in good condition. Strawberries were injured by the late frosts.

Plympton (Winthrop Fillebrown). — All common insects seem to be abundant this year. The acreage of Indian corn is about as usual, and it is looking finely. Haying has not begun, but grass is growing rapidly and we look for a good crop. Forage crops will have about the usual acreage. There is no increase in the acreage of potatoes, but they are looking better than usual. Early market-garden crops gave

better yields and brought higher prices than usual. The supply and price of dairy products are the same as formerly. Pasturage is in very good condition. Fruits and berries are going to give large crops.

Kingston (GEORGE L. CHURCHILL). — Potato bugs are doing some damage. Corn is late and there is only a small acreage. Not much haying has been done, but the crop looks very fair. There will be no special increase in the acreage of forage crops. Early potatoes are looking well. Prices for market-garden crops good and prospect for later ones very fair. Dairy products and dairy cows are the same as usual in supply and price. Pastures are in very good condition. Strawberries are the principal fruit crop grown.

Rochester (GEO. H. RANDALL). — Onion maggots, cut worms, potato bugs and Hessian flies are doing some damage. Corn is a week to ten days late; acreage less than last year. Very little hay has been cut as yet, but there is a large crop in sight. The acreage of forage crops will not be increased. Early potatoes look well, with about the same acreage as last year. Early market-garden crops are growing well and find ready sale; prospect good for later ones. Pasturage is in very good condition. The strawberry crop is so large that prices hardly pay expenses, many berries being left unpicked. Raspberries promise well; blackberries bloomed full.

BARNSTABLE COUNTY.

Falmouth (DANIEL R. WICKS). — Potato bugs and cucumber beetles are becoming abundant. No field corn is grown here, but more and more sweet corn is planted every year. Haying has not commenced as yet, but a large crop is in sight. The acreage of forage crops will not be increased as very little stock is kept here. Acreage of early potatoes about normal, and they are looking fairly well. Very few market-garden crops have been harvested; prices normal. Price of cows about normal; milk the only product sold and prices as last year. Pasturage is good, but there is more water than fibre in the grass. Strawberries are a fair crop; raspberries and blackberries very promising; currants good; plums good; peaches fair; apples and pears set well; grapes blooming well.

Sandwich (R. F. ARMSTRONG). — Potato bugs, tent caterpillars and Hessian flies are doing damage. Corn is backward, and the acreage decreases every year. Haying has hardly begun, but there is prospect of a good crop. There will be no increase in the acreage of forage crops. The acreage of early potatoes is about the same as usual, and the prospect for the crop is good. Dairy products are about the same as usual in price and quantity; dairy cows out of sight. Pasturage was never in better condition. Strawberries are plentiful, quality below the average; other small fruits not grown.

Mashpee (W. F. HAMMOND). — Potato bugs, cut worms, army worms and Hessian flies are doing damage. Indian corn is looking well, but

the acreage is less than that of last year. Haying has not begun as yet, but the prospect for the crop is good. The acreage of early potatoes is above the average and a good crop is promised. Early market-garden crops are about average in yield and price. Dairy products are about average in quantity and price. Strawberries, raspberries, gooseberries and currants all promise well.

Barnstable (JOHN BURSLEY). — Tent caterpillars and potato bugs are doing some damage. Corn is a little late and is small on cold ground; acreage a full average. Very little hay has been cut, and there is a good crop in prospect. The acreage of forage crops will not be increased. Acreage of early potatoes average, but they have come up poorly. Peas made a heavy yield, but prices were a little below the average. Milk rules about as formerly in price, with a full supply; cows high. Pastures are in good condition. The strawberry crop is very heavy and cranberries are blooming very freely.

Brewster (THOS. D. SEARS). — Potato bugs and striped squash bugs are doing some damage. Indian corn is looking well, with the acreage about the same as last year. Haying has not commenced, but there is prospect of a good crop. The acreage of forage crops will be increased this year. There are no market gardens in this vicinity. There is about the usual acreage of potatoes and the promise of a fair crop. Price and supply of dairy products same as last year; price of cows above that of last year. Pasturage looks well, but rain is needed. The strawberry crop is good.

Eastham (J. A. CLARK). — Potato bugs and asparagus beetles are the worst insect pests. Haying has hardly begun, and the prospect for the crop is good. The acreage of forage crops will not be increased. Acreage of early potatoes about as usual and they are looking well. Pastures are in good condition. Apples and pears promise well. The asparagus season is about over, with a rather better crop than last year and very good prices.

DUKES COUNTY.

West Tisbury (GEO. HUNT LUCE). — Potato bugs are doing some damage. Indian corn is rather backward, with about the usual acreage. Haying has not begun, and the prospect for the crop is good. There is about an average acreage of forage crops. Acreage of early potatoes about as usual and they promise well. Early market-garden crops have been average in yield and price. Dairy cows are quite high, and dairy products bring average prices. Pasturage is in very good condition. Strawberries are doing well.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

SOME CAUSES AFFECTING THE PROFITS OF DAIRYING.

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It is hardly necessary to assert that dairymen are deriving less profit from their investments and lower wages for their labor than they would like, or even than that which a good business should lead its patrons to expect. The purpose of this paper is to notice briefly a few of the things that stand in the way of the best success of dairy farmers. We shall consider only those concerning the producing end of the business, not because these are of greater importance than those affecting the marketing end, but because the remedies are in the main simpler and more under the control of dairymen.

It will be generally conceded that capital invested in agriculture yields smaller returns, and that farm labor is poorer paid, than capital and labor employed in manufacture or commerce. Is this disproportion due to conditions inherent in husbandry, or is it the result of a lack of intelligent efforts, poor business methods and failure of dairymen to master their business? Will not the same degree of skill and intelligence expended in agriculture command equal compensation here as in other pursuits? Occasional instances of marked success appear to indicate that it will. Indeed, the speculative element is more largely eliminated, values are more stable and dividends are more certain than in the majority of business.

THE KIND OF COWS KEPT.

One of the most important factors in profitable dairying is good cows. These should be adapted to the particular business and conditions of each dairy farm. No single breed or type meets all conditions, else what need of such diversity of size, conformation and quality of product. To be specific, for butter and cream production it is

probable that the cost of production will be less and the profits therefor greater where cows yielding milk with a rather high percentage of fat are kept. Such cows produce relatively less of the milk solids not fat, and hence turn a larger proportion of their food and energy into the particular product desired, than those yielding a large quantity of milk poor in fat. This accounts for the general popularity of Jersey and Guernsey blood for butter-producing herds. Again, on a rugged New England pasture, where feed does not grow luxuriantly, large areas must be traversed and industrious efforts expended to secure the necessary food. A big, coarse, slow-moving cow would be at a disadvantage, while a small, close-built, active animal would be in its element. On the other hand, in rich meadows and in stables under high pressure the tables would be turned. This suggests where the Ayrshire and the Holstein types may be placed to the best advantage. But, after all, mistakes in these particulars are less common than mistakes in selecting good individuals.

Some very interesting results have been obtained in a canvass of certain creamery districts in the State of Vermont, and published as a cow census of that State. These results have been very ably discussed in recent publications of the Vermont Experiment Station, and show not only the wide difference in product between different herds, but also some of the causes contributing to the variation. I have not the figures before me as I write; but my memory tells me that the poorest herds averaged about 80 pounds of butter fat per cow per year, worth $20. The best herd averaged in the same time nearly 300 pounds of fat, worth $75, nearly four times the product of the poorest cows. It is easy to believe that cream production was more profitable to the owner of the best herd.

Bulletin No. 20 of the Storrs Experiment Station illustrates the principle and brings the truth home in a very convincing manner. Twenty-five cows were observed for one year, the food consumed and the products noted. The cost of feed varied between $32.36 and $48.80, or one cow ate two-thirds as much as the other. The butter product varied between 165 pounds and 509 pounds. It so happened that the cow consuming the least food produced the smallest quantity of butter. If the smallest butter product paid for the food consumed, the consumption of $16.44 worth of additional food produced 344 pounds of butter, which would make the cost per pound of the additional amount 4¾ cents. If the first cow paid for her keep the other yielded a profit of $55. A herd of 20 cows like the latter would pay for all the farm products and food consumed, and yield an annual profit of more than $1,000. While it is the cows that eat the most, as a rule, that produce the largest products and greatest profits, the difference in consumption is much less than in production. Among this same herd of 25 cows the third cow in butter product, with 360 pounds, consumed $40.60 worth of feed, and the twenty-third in butter product, with 276 pounds, consumed $46.21 in feed, almost as much as the best butter producer.

The average cost of feed and amount of product of the best 5 and poorest 5 are as follows: —

	Cost of Feed per Cow.	Pounds of Butter per Cow.
Best 5,	$42 57	410
Poorest 5,	38 72	221
Difference,	3 85	189
Difference per cent.	9	46

Average profit, best 5,	$31 30
Average profit, poorest 5,	97
Difference per cent between poorest and best,	32.22

In the Kansas Experiment Station Bulletin No. 125 it was observed that the average cow produced a butter income of $9.62, this having been computed from statistics of an average of 626,000 cows per year for ten years. A study of results for 82 herds in the best creamery section showed an average annual income per cow (generally including a calf worth $8 to $12) of $32.86. The best 5 herds, where calves were valued at $8 a piece, averaged $45.13, while the poorest 5 herds, where calves were valued at $12, averaged $23.59, — the best herds producing twice as much as the poorest.

It is futile to continue the examination of evidence in favor of better cows. The owner of the best is constantly seeking to improve his herd. He is alert to secure better animals and increase his profits. He reads all the published information he can get, and is alive to all his needs. The owner of poor cows, on the contrary, is in ignorance of the fact, doesn't believe other cows would "do better on his feed," and has no ambition to inform himself in regard to his business or improve his conditions.

The Way Discarded Cows are replaced.

We have submitted evidence of a truth which few people doubt, that some cows are far more profitable than others. The problem is how to get these better cows. Among those who make dairying an important business, and pursue its practices intensively, the town and city milk producers occupy a prominent position. It is a common condition among these that their capacity to care for dairy animals is limited to cows actually in milk, or at least to those milking during the greater part of the year. Not possessing facilities for rearing the heifers to replenish their herds, they depend upon purchase for fresh cows. The purchase of milch cows, even by those best qualified to select, is attended by more or less risk of disappointment. Cows are commonly sold for a reason. Among the reasons for sale may be mentioned old age; lack of constitution or capacity to stand feed; bad habits, such as kicking or restiveness, sucking or holding up milk; garget, resulting in defective udders; short teats; hard milkers; abortion or other disorders. The majority of cows offered for sale by dairymen who are breeders are the culls of their herds. Dairymen who depend upon purchase for their cows realize this to a certain extent, as

they very keenly realize the difference between good and poor dairy animals, and are eager to secure the best, even at prices two or three times greater than common stuff brings. It is unfortunate that breeders do not realize this as fully as they should, and we are inclined to blame them for rearing so large a percentage of low-grade stock; but the fault is not theirs alone. City dairymen do not buy direct of the breeders, thus informing them of their needs; they depend rather upon middlemen and dealers. The dealers have pursued a short-sighted policy, keeping breeders in ignorance of the market value of the best cows. Often they take three or four common ones to secure one that is choice, paying a level price for the lot, or rating them at a nominal difference. The breeder, therefore, does not know what the best cows will sell for to the city milkman, and does not think how much more profitable it would be to breed and rear that kind.

Again, realizing or not realizing the difference in value, he does not employ methods calculated to produce the best results in breeding. Upon one farm heifer calves are nearly all reared, good, bad and indifferent alike; upon another they are all destroyed, without regard to dairy promise. If some sort of an exchange could be arranged, whereby the farmer with the taste and facilities for rearing heifers could secure the best of his neighbors or the city dairyman in place of the weedy ones born on his own farm, how much better results could be obtained! This is an idea that has already taken root, and is gaining favor among many engaged in the business.

More than this exchange is necessary, however, to satisfy the needs of the trade, — a system of selection needs to be observed. The laws of heredity control the dairy function as fully as they do other characters. Beef habits do not predispose offspring to produce milk. To secure superlative dairy heifers one must lay the foundations in ancestry excelling in the desired direction. The best success, therefore, involves the careful study of the dairy qualities of the dams and grand dams of the heifer calves we propose to rear. Superior excellence of ancestry in the qualities sought is the best guarantee of the same qualities in the progeny. In this connection, while I regard the actual production of a cow as the best evidence of her own ability to produce and transmit to her offspring, I do not disregard conformation, general appearance and type. There have been cows with great records which did not transmit the ability to come anywhere near these records in their progeny. There have been cows, on the other hand, not great milkers themselves, whose offspring have yielded large amounts. I regard the type and conformation of a cow of equal value with her actual performance in determining the value of her heifer calves for the dairy. I would not reject the progeny of a well-bred, typical cow even though her own product was somewhat unsatisfactory, nor would I certainly accept that of a large milker whose shape was so faulty as to render transmission doubtful. The cow is of less consequence in determining the dairy qualities of heifer calves than the bull. While

we may, by careful selection of cows, maintain a uniformly high standard of excellence in our herds, most of the real improvement must come by mating them with the right kind of a sire. I have observed over and over again the qualities of a cow, the shape of her udder, her temperament, her conformation, and numerous little individual peculiarities to be close reproductions of the same characters in the dam of her sire. Breeders do not realize as they should the value of a superior bull; they are often careless and indifferent in his selection. The possibilities for improvement or injury do not occur to them. Or, if in a general way farmers concede the advantage of a choice bull over a common one, they tremendously underrate it. If this idea were expressed in dollars and cents perhaps its reality would be more impressive.

A common bull in four years' time in a 20-cow dairy begets 80 calves. If of this number 25 are reared to maturity, possessing the common qualities of their parentage, and are worth a common price, say $32 each, they represent a value of $800. Without attempting to determine at this time whether cows can be profitably reared to maturity for $32 each, let us observe what would be the value of the progeny of a superior sire. On the same basis of reproduction, and with the same number of heifers reared, but with the choice progeny of superior stock, we may reasonably expect a value of $50 each. Instead of an $800 aggregate we have $1,250, a difference of $450, without increasing the cost of production a penny. If we go still further and produce a grade of heifers worth $75 each at maturity; if we use our choice prepotent sire more freely, and secure the best of his progeny from our neighbors' cows, and rear not 25 but 50 or 100 heifers, his value becomes not $450 greater than that of the scrub, but $1,075, $2,150 or $4,200. Not only will the use of a choice bull and the rearing of $75 cows be more profitable than common breeding, but it will reflect on all our business. We shall be more interested, nay, even enthusiastic; the drudgery of farming will disappear. Instead of teasing buyers to take our common stuff off our hands at a loss, we shall see them eagerly persuading us to part with them by tempting offers. How easy it is to sell what people want! How hard to dispose of that for which there is no demand!

Feeding.

The economical feeding of cows is a large subject in itself and can barely be mentioned in a short paper of this kind. The two points of kind and amount of foods to be used belong to the topic. As to kind in general, feeds should be produced upon the farm as largely as possible, and purchased feeds should be selected to supplement the home-grown supply. Usually this means the purchase of feeds rich in protein, paying little attention to the carbonaceous sorts on the market. In buying, three factors are to be considered: the composition and digestibility, the suitability to feeding milch cows, and the price.

The amounts fed depend upon conditions on the farm and should be settled upon economic principles. The laws of increasing and diminishing returns are operative here as in most lines of agricultural production. To state this principle in another way, it is evident that cows fed on starvation rations yield no product, and therefore the little food they do consume is wasted, with a minimum profit. On the other hand, by greatly over-feeding with expensive fodders wastefulness and loss are incurred. Somewhere between these two extremes is a point where the food consumed yields the greatest product per unit, or each unit of product is obtained at the lowest cost and therefore at the greatest profit. It is the feeder's business to learn where this point is. It would be nearer to the high limit in towns where products were high priced, than in remote country districts, far from markets. In general, feeding cows to half capacity, like working mills and factories on half time, is less profitable than when at full producing capacity.

Condimental Feeds. — The general use of condimental feeds acts adversely on the profits of the dairy. Considered as feeds, these preparations are sold at prices out of all proportion to their value. Mixtures of bran, middlings, corn, linseed, salt, etc., selling at from 10 cents to 25 cents per pound, when their feeding value is in no case more than 2 cents, is ridiculous. Considered as medicines, their use is pernicious. The healthy animal needs no medicine; the sick animal needs to be treated specifically and not with a general shot-gun mixture, — a panacea for all the ills to which flesh is heir. The claims made by manufacturers of these condiments would be quickly discredited as preposterous if made by candid people of your acquaintance. It is not expected that these words will deter any from the use of condimental feeds or patent medicines. Men dearly "love to be humbugged," and will scarcely forego the pleasure it gives for mere financial reasons, which are the chief ones against the use of condimental feeds.

Variations in Quality of Milk.

It is well understood that milk varies in its percentage composition as regards solids, particularly in the fat content. Many of the causes of this variation are also well known.

Breed. — Jersey and Guernsey cows yield richer milk than Holsteins and Ayrshires.

Lactation Period. — Milk from cows soon after calving is poorer in fat than in the middle of the lactation period. As cows approach the time of freshening milk grows richer, and is generally richest in fat just before they dry off, when the amount secreted is small.

Individual. — Each cow has a normal fat content in her milk which she very persistently maintains, subject to the variation caused by different stages of lactation. Between different individuals in the same herd, the same breed and different breeds is a variation amounting sometimes to the difference between less than three and more than

seven per cent fat. In general, the richest milk is produced in the smallest quantity, and poor quality is compensated by a large flow.

Colostrum. — The first milk after parturition differs from true milk in containing double the solids and ash, a large part of the former being albumen. It is not, therefore, like true milk, nor adapted to the same purposes of use; but is more like eggs, and particularly rich in nutrients suited to the early feeding of the calf. It should be remembered when feeding it in place of skim milk that one quart of colostrum is about equal to four quarts of skim milk, and its use governed accordingly.

Feed. — The kind and amount of food consumed by cows exerts less influence upon the fat content of milk than farmers are wont to suppose. Thousands of actual determinations of fat have confirmed this truth. A prominent reason why farmers do not accept this result is that they observe things from a different point of view; they never have determined actual fat, hence are not qualified to judge of its variation; they have merely observed the color and the "amount of cream." Scientific people never base their determinations of quality upon cream, which is far more variable and elusive than milk itself.

First and Last Milk. — Determinations indicate that the fat content of first or "fore" milk is about 2 per cent, while the "strippings" or last milk tests 8 to 10 per cent. Farmers are generally aware that a difference exists but do not appreciate its importance. It is right here that the whole subject of quality, so far as this paper is concerned, centres. Many losses occur through ignorance of this point, which may be best illustrated by concrete examples.

A. — A young man entered a fine Devon cow in a butter-fat producing contest at a fair. The award was to be based upon the actual fat found in twenty-four hours' milk weighed and determined by the Babcock test. From appearances this Devon cow was a certain winner. So confident was her owner that he milked her quickly each time, and gave himself little apparent concern over the results. A competitor with a good grade Jersey, not so confident but determined to go the limit, milked his cow, and then kneaded her udder and stripped and stripped, until he could get no more. He secured a $25 prize by 2 ounces of fat over the Devon. Had the owner of the latter put his pride in his pocket and done about fifteen minutes stripping he would probably have been repaid at the rate of $100 per hour for his time.

B. — Some people producing cream and veal from the same cows were wont to milk the herd partially and let the calves finish. Had they reversed the order both the veal and the cream products would have been more satisfactory.

C. — Mr. Brown keeps a mixed farm, where his men do the field work between 7 and 6 o'clock, and the chores, including milking, before breakfast and after supper. Being eager to get to the village in the evening they hurry through milking, leaving an average of 1 pound of milk in the udders of the 20 cows. Having been out the even-

ing before they rise late in the morning, again leaving the strippings. Forty pounds of milk with 8 per cent fat at 30 cents per pound would be worth about $1, which will pay for six hours' labor. Two minutes on each cow, or less than one hour, would have saved this amount; carried through the year it would reduce the profits of the herd by $350.

D. — The Chicago milk inspectors, in their zeal to perform their duty to the city, not only tested the milk, but, to prevent any jobbery, sent their own men to milk the cows and take the samples. As a result nearly half the cows fell below the city standard, and the fact was widely advertised by its press. The owners of these cows were not slow to announce later that after the inspector's milkers had left they milked out from 1 to 5 pounds from each cow. From the inexperience of the milkers, or their unfamiliarity with the cows, the latter had "held up" their milk. The milk they didn't get tested 6 to 8 per cent fat. The net result was to leave the public in ignorance of the real truth concerning the quality of these cows.

Anything which causes the cow to withhold the last milk reduces the fat per cent. Flies, excitement, strange milkers, roughness, scamp work, etc., which prevent the withdrawal of the whole secretion, reduce the amount, much more the quality, and therefore the profits of dairying. The most important part of milking is to *get it all*. No doubt the profits in many dairies are lessened hundreds of dollars a year through failure to do this.

Know the Cows. — A breeder and cream producer found that 10 two-year-old heifers during their first year in milk had yielded a profit over the cost of food consumed of $118. He would have been well satisfied had not the individual records of these heifers been kept. A computation of the daily weighings of milk and monthly Babcock tests revealed the fact that 4 of these 10 heifers had been kept at a loss of $29. This breeder was therefore chagrined to think that two-fifths of his labor had been spent for nothing, for had he disposed of the 4 and done only three-fifths the work his profit would have been $157 on the 6. This incident illustrates the point that an account with the whole herd is inadequate to the dairyman's needs. To prevent the contingency of keeping one, two or more unprofitable cows he must have information of the product of each member of the herd. I believe that here is the most important factor in the profits of dairying, so far as production is concerned. If dairymen would weed out one-third of their herds by this plan, lightening their labors by that fraction, their aggregate profits from the sale of dairy products would be greater. They would have a surplus of forage to sell; and prices would advance, thus favorably affecting the financial advantages in three ways at once. But how can this be done?

Milk Test Associations.

The weighing and recording of individual milk yields is well within the abilities of the dairymen. The expense for spring balances and milk scores need not exceed $4 for an indefinite period, five or ten years. If one would not weigh daily, results obtained by a three days' record for each month, and the sum multiplied by ten, has been found to approximate very closely to actual daily weighing.

But the use of the Babcock test on farms is less easy and practicable, and the solution must be found in co-operation. First in Denmark, then in Canada, and afterwards in the United States, communities of dairymen have clubbed together and employed an expert to test their cows. Any bright young man with a dairy school training can do this, and the expense would be insignificant as compared with the benefits derived. One expert could test the cows of from 25 to 50 dairies, to the number of 300 to 500, once a month for a year at a cost somewhat as follows: —

Wages of expert, 365 days at $2,	$730
Team, 50 cents a day and feed,	183
Babcock tester, glass ware, balances, acid, etc.	50
	$963

This outlay would make the cost of monthly tests $2 to $3 per cow, perhaps an average of $75 in a 20-cow dairy. I do not believe that there is a 20-cow dairy in the State in which the judicious use of the information so gained would not increase its profits three times the outlay. Farmers, you haven't many opportunities to make $3 in a year by spending $1.

An expert is not limited to the number of herds and animals specified to secure satisfactory results. By expanding so as to make a quarterly instead of a monthly test, a man's capacity could be increased to 1,000 or 1,200 cows, which could thus be tested at $1 a head.

Here is an opportunity for granges to take up a matter of much economic interest to their patrons. If a subordinate grange is too small to warrant the enterprise singly, let two or more combine, or let a Pomona grange undertake it. As a grange, your work would be to find the suitable person for the work. His part would be to secure patronage. This would rapidly increase when once well started by grange influence.

When dairymen once know the performance of each of their cows, and what it means to them, they will wonder why they have remained in ignorance so long.

SERIES OF 1906. VOL. 19. NO. 3.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF JULY, 1906.

CLOVER.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

Approved by

The State Board of Publication

Crop Report for the Month of July, 1906.

Office of State Board of Agriculture,
Boston, Mass., Aug. 1, 1906.

Bulletin No. 3, Crop Report for the month of July, is presented herewith. Attention is called to the article on "Clovers: their Value, Characteristics of Varieties and Methods of production," at the close of the bulletin, by Prof. Wm. P. Brooks, professor of agriculture at the Massachusetts Agricultural College and director of the Hatch Experiment Station. Not enough attention is paid to the growth of the various varieties of clover by our farmers, and this article cannot but be of assistance to any one engaged in dairying. A greater production of these useful plants would result in a decreased grain bill in every case where they were fed with a knowledge of their proper value in the ration of the dairy cow.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture (Crop Reporter for July, 1906) finds that the preliminary returns show the acreage of corn planted to be about 95,535,000 acres, an increase of about 1,524,000 acres, or 1.6 per cent, as compared with the estimate of the acreage planted last year. The average condition of the growing crop July 1 was 87.5, as compared with 87.3 on July 1, 1905, 86.4 at the corresponding date in 1904, and a ten-year average of 86.4.

The average condition of winter wheat July 1 was 85.6, as compared with 83 a month earlier, 82.7 on July 1, 1905, 78.7 in 1904, and a ten-year average of 79.4.

The average condition of spring wheat on July 1 was 91.4, as compared with 93 a month earlier, 91 on July 1, 1905, 93.7 in 1904, and a ten-year average of 88.2. The average

condition on July 1 on spring and winter wheat combined was 87.8, as compared with 85.8 on July 1, 1905, and 84.5 at the corresponding date in 1904. The amount of wheat remaining in farmers' hands on July 1 was estimated at about 46,053,000 bushels, equivalent to about 6.6 per cent of the crop of last year.

The average condition of the oat crop on July 1 was 84, as compared with 86 a month earlier, 92.1 on July 1, 1905, 89.8 in 1904, and a ten-year average of 89.4.

The average condition of barley on July 1 was 92.5, against 93.5 a month earlier, 91.5 on July 1, 1905, 88.5 at the corresponding date in 1904, and a ten-year average of 88.2.

The average condition of winter rye on July 1, was 91.3, as compared with 92.7 on July 1, 1905, 88 at the corresponding date in 1904, and a ten-year average of 90.1.

The acreage for potatoes, excluding sweet potatoes, is less than that of last year by about 38,000 acres, or 1.3 per cent. The average condition on July 1 was 91.5, as compared with 91.2 on July 1, 1905, 93.9 in 1904, and a ten-year average of 92.1.

The acreage of tobacco is less than that of last year by about 40,000 acres, or 5.2 per cent. The average condition July 1 was 86.7 per cent., against 87.4 a year ago.

In Massachusetts the acreage of corn as compared with that of last year is 100, and the condition July 1 was 90; the average condition of oats was 93; the average condition of rye was 98: the acreage of tobacco, 105, and its average condition, 100; the average condition of pasture, 98; the average condition of clover, 91; the average condition of timothy, 95; the average condition of hops, 90; the acreage of potatoes and their average condition, 92; the condition of Canadian peas, 95, and of cow peas 100; the average condition of beans, 91; the average condition of cabbages, 91: the average condition of onions, 89; the average condition of tomatoes, 90; the average condition of apples, 78; the average condition of peaches, 70; the average condition of grapes, 84; the average condition of blackberries, 95; the average condition of raspberries, 89: the average condition of strawberries, 95; the average condition of cantaloupes, 81: the average condition of watermelons, 81.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending July 2. — The week was warmer than usual in the Lake region, central valleys, Atlantic coast districts and over the southeastern Rocky Mountain slope. The week was cooler than usual on the north Pacific coast, over the greater part of California, throughout the Plateau and Rocky Mountain regions and in the upper Missouri valley. The rainfall exceeded the average in the lower Missouri, upper Mississippi and Red River of the North valleys, southern New England, and over limited areas in the South Atlantic and east Gulf States. In the central valleys and the central Lake region the rainfall was below the average.

Week ending July 9. — The week was warmer than usual in the Pacific coast districts, and in the upper Missouri and Red River of the North valleys. The temperature averaged nearly normal on the central Gulf coast and over the northern portion of the Middle Atlantic States. Elsewhere the week averaged cooler than usual. Heavy rains occurred in the lower Lake region and upper Ohio valley, and along the Atlantic coast from southern New England to Florida. Generally throughout the central valleys and upper Lake region the rainfall was much below the average, and less than the usual amount fell in the interior of the Middle Atlantic States and northern New England.

Week ending July 16. — In the Lake region and upper Ohio valley and on the west Gulf coast the temperature averaged slightly above the normal. Elsewhere east of the Rocky Mountains the week averaged cooler than usual. Over the western portions of the Plateau districts and generally in the Pacific coast States the week averaged warmer than usual. Over most of the Gulf States the rainfall during the week exceeded the average, and in many places was excessively heavy. The Middle Atlantic States and portions of the Mississippi and central Missouri valleys and upper Lake region also received more than the average precipitation, but there was, as a whole, less than the average in the central valleys, Lake region and northern portion of the Middle Atlantic States.

Week ending July 23. — Generally throughout the Plateau districts and in the Lake region, New England and the Middle Atlantic States the temperature for the week was above the normal. In the central Missouri valley and in the central and west Gulf States the week was cooler than usual, while elsewhere the temperature was nearly normal. In the Middle Atlantic States, Ohio valley and Tennessee, and over the greater portion of the Gulf States, the precipitation was in excess of the average, being unusually heavy in portions of the Middle and South Atlantic States. Over the greater part of the Lake region and upper Mississippi valley there was less than the average rainfall.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending July 2. — New England. Boston: The temperature was much higher than in the preceding week, the maximum ranging from 85 to 90, except on the first and last days. The fore part of the week was fair, the latter part being showery. The rainfall in Maine was light; it was above the normal in Massachusetts and near normal in the other States. The sunshine was near the average.

Week ending July 9. — New England. Boston: There was much cloudy weather. Showers and scattered thunderstorms were general Tuesday and Wednesday, and in eastern Massachusetts, Rhode Island and eastern Connecticut the last of the week. Precipitation for the week was near the normal in the northern portion and above the normal in the southern section. The temperature was low. More sunshine and higher temperature are needed.

Week ending July 16. — New England. Boston: Showers were general on the 9th and 10th. On the afternoon of the 10th severe thunderstorms in eastern Massachusetts and southeastern Maine caused loss of life and property. The remainder of the week was generally clear, the sunshine being beneficial. The temperature was seasonable, and the precipitation sufficient for all needs.

Week ending July 23. — New England. Boston: The week was fair, with abundant sunshine, except on the 17th

and 21st, when the weather was showery. The rainfall was light in eastern Maine, southern New Hampshire and parts of eastern Massachusetts, and was normal or above elsewhere. The temperature averaged 3° to 5° above the normal. The weather was favorable, except where the rainfall was excessive.

The Weather of July, 1906.

The opening days of the month, the 1st to the 4th inclusive, were generally cloudy, with scattered showers and occasional local storms. There was a prevalence of easterly winds during this period, which, with the absence of sunshine, caused generally low temperatures for the season, the daily means ranging from 2° to 4° below the seasonal average. A season of generally fair weather obtained from the 5th to the 16th. The temperatures during this time ranged near normal, with the daily means from 3° to 5° above those of the preceding days of July. There were, however, no marked extremes in either maxima or minima; with slight exceptions, the maxima on all days were above 80°, except where influenced by local conditions. The clear weather and abundant sunshine, with the higher temperatures, were much needed and very beneficial. During the week from the 17th to the 23d the temperatures ranged higher than during any week heretofore this season. The maxima at nearly all observation points were above 80° each day, with the minima ranging between 60° and 70°. Scattered showers occurred during the 17th, 18th and 21st, but the rainfall, with a few exceptions, was light. The weather of this portion of the month was characterized by exceptionally high moisture, and the muggy, humid atmosphere, combined with the high temperatures, produced unusually oppressive and trying weather conditions. There was much complaint of the heat, and numerous prostrations of persons and animals occurred. For the remainder of the month the weather was very unsettled, almost daily showers were of occurrence over a large portion of the State, though with light rainfall. Owing to easterly to northerly winds during much of the time the temperatures ruled below the seasonal average. In coast sections light to dense fogs were unusually prevalent.

The cool weather and absence of sunshine were unfavorable. July, as a whole, was an unpleasant month for the mid-summer season.

In the circular to correspondents, returnable July 23, the following questions were asked : —

1. What insects are proving most troublesome in your locality?
2. What is the condition of Indian corn, and what proportion of the crop will be put into the silo?
3. What is the quantity and quality of the hay crop as compared with former years?
4. What forage crops are raised to supplement the hay crop, for the silo, and to eke out the pastures, and what is their condition?
5. What is the condition of market-garden crops, including potatoes, and how have those already harvested compared in yield and price with former years?
6. What is the prospect for apples, pears, peaches, plums, quinces, grapes and cranberries.
7. What is the condition of pasturage in your locality?
8. How have rye, oats and barley compared with former years, both as grain and forage crops?

Returns were received from 163 correspondents, and from them the following summary has been made : —

Insects.

Potato bugs are reported as being more numerous than usual and harder to keep in subjection. Elm leaf beetles are also more than commonly prevalent, and reports of damage from gypsy and brown-tail moth caterpillars continue to come in from a wider area than formerly. Aside from the insects mentioned above an unusually light amount of insect damage is reported. Other insects mentioned by correspondents are cut worms, squash bugs, both black and striped, cabbage worms, rose bugs, currant worms, tent caterpillars, horn and cattle flies, cranberry vine worms, codling moths, curculios, grasshoppers, plant lice, white grubs, pear tree psyllas, onion maggots and wire worms.

Indian Corn.

At the time of making returns Indian corn was a little backward for the time of year, but, owing to the warm nights and days, with plenty of moisture, was making luxuriant growth, and gave promise of soon making up lost ground and giving a good crop. Seasonable weather during August seems to be all that is needed to give a good crop of both grain and stover. Silos are coming more and more into use with every year, and in the dairy sections the larger part of the corn crop is destined for the silo.

The Hay Crop.

Haying was by no means completed at the time of making returns, but correspondents were practically unanimous in the statement that a crop considerably above the average in quantity had been or was being secured. The quality of the crop also was reported as excellent, but there was considerable complaint of injury in the making, owing to frequent showers and rainy days. Where the first crop was removed early more than an average crop of rowen may be expected as it should have started well with the moist and cloudy weather, but on the fields not cut at time of making returns a second crop of any amount can hardly be looked for.

Forage Crops.

The acreage of forage crops is certainly not increased over last year, owing to the excellent prospect for the hay crop. Corn is the most popular crop for this purpose, with the millets and oats coming closely together in second and third places, and Hungarian grass and barley following, in the order named. Oats and peas, sown together, are an increasingly popular combination for forage purposes. Other crops grown for forage are rye, cow peas, cabbage, turnips and clover. All these crops were reported as in excellent condition, owing to the frequent showers and the warm, growing weather.

Market-garden Crops.

Market-garden crops were generally reported as yielding well, and bringing prices fully up to the normal and possibly

a little above. Those yet to be marketed promised good yields so far as reported on.

Early Potatoes.

Very few early potatoes had been dug at time of making returns, but those harvested yielded well, and the general condition of the vines promises a good crop for those yet to come. Late potatoes also promise well, and but one complaint of blight was noted.

Fruits.

Apples will apparently be rather a light crop in most sections, the returns being decidedly less favorable than a month ago, late frosts having apparently done more damage than was then realized. There is also some complaint of a twig blight on both apples and pears. Pears and plums will be light crops, mainly because of injury from frosts. Peaches will be a fair crop in most sections, though not nearly as heavy as that of 1905. Quinces generally promise well. Grapes have set unusually well in most sections, and barring accidents should give a heavy yield. Cranberries also promise well, particularly in southeastern sections.

Pasturage.

The frequent rains have kept feed in pastures green and growing, and it is probable that pastures were never in better condition at this time of year than they are at time of going to press. With anything like seasonable rains the fall feed should be unusually abundant.

Small Grains.

There were numerous reports of rust on oats, and the crop was rather below average, both for grain and forage. Rye is reported to be a good crop, both for grain and forage, being used for early spring feed to a considerable extent. Barley is practically grown only for forage, being the favorite forage crop for fall feeding, as it will withstand all but the severest frosts, and where already sown is reported as doing well.

NOTES OF CORRESPONDENTS.

(Returned to us June 23.)

BERKSHIRE COUNTY.

New Marlborough (E. W. Rhoades). — Grasshoppers are rather numerous. Indian corn is looking well; very little is put into the silo. Hay harvest is on with a heavy crop of good quality. Corn and millet are the principal forage crops grown and are making good growth. Garden crops are in fine condition and early potatoes yield well. Pears and grapes promise full crops; no plums; apples only fair. Pasturage is in excellent condition. Rye is a heavy crop; oats good where not rusted.

West Stockbridge (J. S. Moore). — Potato bugs are proving more destructive than last year. Corn is looking well; only one silo in town. The hay crop is much heavier and of better quality than for the past three or four years. Pastures are unusually good and but little forage crops have been put in. Potatoes look very promising, none dug as yet. Late frosts affected apples; pears quite plenty. Rye, oats and barley are about average crops.

Lee (A. Bradley). — Potato bugs are the only insects doing damage. Corn is above the average in condition and 10 per cent of the crop is grown for ensilage. Hay is a large crop of first class quality. Corn is our principal forage crop. Potatoes are promising unusually well. Apples will not be more than half a crop. Pasturage is in fine condition. Rye is a full crop and oats nearly so.

Becket (Wm. H. Snow). — Potato bugs are unusually plenty. Corn is late and a large proportion of the crop will be put into the silo. Hay is fully an average crop of good quality. Corn and millet are our principal forage crops. Garden crops are late, but potatoes look finely. The prospect for the fruit crop is very poor, probably injured by frost. Pastures are in good condition. Rye, oats and barley are full average crops.

Dalton (Wesley B. Barton). — Potato bugs are doing some damage. Indian corn is in good condition and half the crop will be ensiled. The hay crop is good in quantity, but has been somewhat injured in getting by bad weather. Japanese millet and peas and oats are our principal forage crops and have done well. Potatoes are not promising well and show some blight. Apples will be a 25 per cent crop; pears 20 per cent;

no plums. Pasturage is in good condition. Rye good; oats and barley 100 per cent.

New Ashford (Elihu Ingraham). — Potato bugs are doing some damage. Indian corn is in good condition; none raised for silo. The hay crop is above the average in quantity and quality. No forage crops are raised here. Potatoes are looking finely. Apples will be a poor crop; other fruits little grown. Pastures are in good condition. Rye, oats and barley are good crops.

Williamstown (S. A. Hickox). — Potato bugs are doing some damage. Indian corn shows a good stand. There is a normal crop of hay, both in quantity and quality. Oats and peas and corn are our principal forage crops. Market-garden crops are bringing good prices. The prospect for the fruit crop is poor in this locality. Pasturage is in good condition. Rye, oats and barley are good crops.

FRANKLIN COUNTY.

Charlemont (J. M. J. Legate). — Potato bugs are doing some damage. Corn is looking nicely and from two-thirds to three-fourths of the crop will be ensiled. The hay crop is above the average for quantity and the quality is all that could be asked. Corn and millet are the principal forage crops grown and are in fine condition. Potatoes are in fine condition, but none have been dug yet. There is going to be a very light fruit crop, owing to late frosts. Pastures are holding out finely and were never in better condition. Rye, oats and barley are little raised.

Shelburne (Geo. E. Taylor). — Potato bugs are doing some damage. Corn is backward and not in average condition; about one-eighth of the crop goes into the silo. Quantity and quality of the hay crop above the average. Corn, oats and millet are the principal forage crops grown; corn is small, but oats are good. Potatoes look well; none dug as yet. Apples will be a short crop; pears plenty. Pasturage was never in better condition. There is some hay to make yet.

Leyden (U. T. Darling). — Potato bugs are doing some damage. Indian corn is doing well; about one-third the crop will be ensiled. Quantity and quality of the hay crop is very good. Rye, millet, oats and barley are the principal forage crops grown. Market-garden crops are in good condition, with prices comparing well with former years. Apples will be three-fourths of an average crop; pears, plums, quinces and grapes full crops. Feed in pastures is good. Rye, oats and barley are fully normal crops.

Gill (F. F. Stoughton). — Potato bugs are doing some damage. Corn is rather late, but is growing fast and is of good color; only a small part of the crop is grown for the silo. Hay is a little above the average in quantity and quality. Corn and oats are the principal forage crops grown. Apples will give a good yield, except Baldwins. Pasturage is in extra good condition.

Deerfield (H. A. Wells). — There is very little damage from insects. Indian corn is in the very best condition; about one-fourth the crop will be ensiled. Hay is a fine average crop in quantity and quality. Oats and peas and millet are our principal forage crops, and show a heavy growth, but are lodged badly by wind and rain. Potatoes look fairly well; none harvested. There will be a good crop of all fruits except apples. The frequent showers keep feed in pastures in good condition. Rye, oats and barley are little grown.

Sunderland (Geo. P. Smith). — There are no insects at present. Indian corn is much improved and one-half he crop will go into the silo. Hay is a normal crop of first quality. Corn and oats are the forage crops grown. Potatoes have suffered from drought; onion sets now ready and bringing good prices. All fruit will be light, less than half a crop or none at all. Rye, oats and barley are very little grown.

Erving (Chas. F. Clark). — Potato bugs are doing some damage. Indian corn is looking well and fully three-fourths of the crop will be put into the silo. The hay crop is above the average in quantity and of good quality. Corn and Hungarian grass are the principal forage crops grown, and are in good condition. Potatoes are about an average crop The prospect for the fruit crop is good with the exception of apples. Pasturage is in very good condition. There is no marked change in the yield of rye, oats and barley.

Orange (A. C. White). — There is no special trouble from insects. Corn is in normal condition and the normal amount will be put into the silo. A large hay crop is being cut, with unfavorable weather for curing. Barley and Hungarian grass are the principal forage crops grown. Potatoes appear finely at the present time. Apples and pears promise fairly well on high land, where not injured by frosts. Pastures are in very good condition.

HAMPSHIRE COUNTY.

Prescott (W. F. Wendermuth). — Potato bugs are doing some damage. Indian corn is in good condition, but is a few days late; about 5 per cent of the crop is grown for the silo. Hay is a full crop of good quality. Corn, oats, millet and barley are the principal forage crops grown; all lodged badly from heavy showers. Late potatoes look well. Apples promise to be three-fourths of a normal crop. Pasturage is excellent for the time of year. Rye, oats and barley are good crops. Help for haying is scarce and this work is not as far advanced as usual.

Ware (J. H. Fletcher). — Potato bugs are doing some damage. The acreage of Indian corn is less than in former years. There is about an average crop of hay in both quantity and quality. Oats, corn and barley are the principal forage crops grown. The fruit crop will be lighter than usual. Pastures are looking well. Oats are not as good a crop as usual.

Belchertown (H. C. West). — Potato bugs are our most troublesome insect. Corn never looked better; perhaps 20 per cent of the crop is

raised for ensilage. Hay is about an average crop in both quantity and quality. Millet, oats and corn are our forage crops, and all are looking finely. Market-garden crops fair; potatoes are looking finely, few dug as yet. Apples are a fair crop; few pears and peaches; hardly any plums and quinces; grape vines loaded. Pasturage is in better condition than usual. Rye, oats and barley are full average crops.

Hadley (L. W. West). — Potato bugs are doing some damage. Corn is above the average in condition; not over one-fifth of the crop will be ensiled. Quantity of hay crop 10 per cent above normal and in fine condition. Japanese millet and corn are our principal forage crops. Market-garden crops are in good condition; potatoes look well, few harvested; yield and prices of all above average. Apples and pears promise well; peaches few. Pastures are in good condition. Rye is an average crop and oats below. Tobacco and onions are looking well.

Easthampton (Wm. C. Clapp). — Potato bugs and squash bugs are doing some damage. Corn is backward, but is growing fast; perhaps one-fourth the crop will go into the silo. There is a heavy yield of hay of good quality. Millet looks well, but oats are somewhat rusted. Potatoes are looking well and market-garden crops are up to the normal. There will be a fair crop of apples and grapes; other fruits little raised. Pasturage never looked better. Rye is a normal crop. Tobacco is growing fast.

Northampton (H. C. Comins). — Potato bugs are very plenty and the elm-tree beetle is doing some damage. Corn is a little late but is very promising; from one-third to one-half the crop will be put into the silo. There is a full crop of hay of excellent quality. Corn and millet are the principal forage crops grown. Market-garden crops are good and potatoes are looking finely; potatoes fairly good. Apples are a light crop and other fruits promise well. Pastures are in fine condition. Rye, oats and barley are but little raised but are good crops.

Williamsburg (F. C. Richards). — Potato bugs are doing some damage, but are not as numerous as usual. Indian corn is looking well; about two-thirds of the crop goes into the silo. Hay is above the average in both quantity and quality. Oats are the principal forage crop, with some oats and peas and Hungarian grass, and are in good condition. Apples promise half a crop; pears full; peaches three-fourths. Pastures are looking well, but feed is deficient in sustenance. There will not be above 20 per cent of a crop of Baldwin apples.

Goshen (Alvan Barrus). — Potato bugs are doing some damage. Indian corn looks vigorous, but a week or two late; most of it is grown for ensilage or for the dry stover. Hay is fully up to the average in both quantity and quality. Corn, oats, barley, millet and Hungarian grass are the principal forage crops grown and are all in good condition. Nearly all fruit is below par, except blackberries, which promise well. Pasturage is in very good condition. Rye, oats and barley are average crops.

HAMPDEN COUNTY.

Chester (C. Z. Inzell). — Potato bugs are doing some damage. Corn is looking well and about one-third of the crop will go into the silo. Hay is a better crop than last year. Potatoes have not been harvested yet. Apples will be a small crop. Pasturage is in good condition.

Russell (E. D. Parks). — Potato bugs are doing some damage. Indian corn is looking well and one-fourth of the crop will go into the silo. Hay is an average crop and of good quality. Oats and millet are our principal forage crops and are in good condition. But little is done in market-gardening here. The fruit crop will be rather light from the present outlook. Pasturage is in very good condition. Rye, oats and barley are average crops.

West Springfield (T. A. Rogers). — Potato bugs, elm-leaf beetles and horn flies are doing some damage. Indian corn is a little late, but is looking well; about half the crop will be ensiled. Quantity of hay crop fully up to the average and quality good. Corn, oats, millet and Hungarian grass are the principal forage crops grown and are looking finely. Market-garden crops are looking well; few potatoes dug, but they are yielding well. Apples will be a light crop; pears average; few peaches, plums or quinces; grapes average; no cranberries. Pasturage is looking well though perhaps a little short. Rye and oats are good crops.

Agawam (J. G. Burt). — Potato bugs are doing some damage. Corn is looking finely and one-half the crop will be put into the silo. The hay crop is good in quantity and quality. Corn is our principal forage crop and all forage crops are in good condition. Condition of potatoes good, yield good and prices a little better than usual. Apples will be a light crop; prospect for others good. Pasturage is in good condition. Rye, oats and barley are good crops. Tobacco is looking finely.

Ludlow (C. B. Bennett). — Potato bugs are doing some damage. Indian corn is in very good condition and about one-fourth of the crop will be put into the silo. There is a heavy crop of hay of fair quality. Oats, corn, millet and barley are raised for forage. Potatoes came up poorly, but promise a fair crop. The fruit crop is small, except grapes, which are very abundant. Pastures are in first-class condition. Rye, oats and barley are about average crops.

Wilbraham (H. M. Bliss). — Indian corn is in good condition and about 10 per cent of the crop will go into the silo. Hay is a good crop in both quantity and quality. Oats, barley, corn and rye are the principal forage crops grown. Market-garden crops, including potatoes, are good crops and bring good prices. Apples 75 per cent of a full yield; pears 85; peaches 95; plums 80; quinces 70; grapes 90. Pastures are in good condition. Rye and oats are good crops and barley a fair crop.

Monson (F. D. Rogers). — Currant worms have been very troublesome and potato bugs are now very plenty. Corn is late, but is growing

fast; probably half the crop will be ensiled. There is a good average crop of hay of good quality. Hungarian grass, golden millet, barn-yard millet, corn and barley are the forage crops grown. Potatoes are looking well. Late frosts, twig blight and other funguos diseases will combine to prevent other than light crops of fruit. Pasturage is in very good condition. Rye, oats and barley are not much grown for grain.

Brimfield (C. S. Tarbell). — Corn has made a good growth in the past two weeks and is looking well. There is a good yield of hay of good quality. Japanese millet and fodder corn are the principal forage crops grown. Potatoes are looking well. There will be no fruit on low lands owing to frost; on high land very good. Pastures are in very good condition. Rye, oats and barley are average crops, though oats are inclined to rust.

WORCESTER COUNTY.

Dudley (J. J. Gilles). — Potato bugs and cut worms are doing some damage. Indian corn is an average crop and three-fourths of the crop will go into the silo. Hay is a little above the average in quantity and quality. Corn, millet, Hungarian grass and barley, and rye for early feeding, are the principal forage crops grown. Market-garden crops, including potatoes, are in average condition. There will be a full crop of fruit. Pastures are in good condition. Rye, oats and barley are average crops.

Brookfield (Frank E. Prouty). — Potato bugs are doing some damage. Indian corn is a good crop and not over a fourth of it will be ensiled. The hay crop is a third larger than usual and of good quality. Corn, Japanese millet and oats and peas are the principal forage crops grown and are in good condition. Condition of market-garden crops good, prices about as usual. Apples will not be over half a crop; also pears; peaches little raised but look well. Pasturage is in good condition. Rye, oats and barley are fully average crops. Potatoes look well, but none have been dug.

North Brookfield (John H. Lane). — Potato bugs are doing some damage. Corn is in good condition and three-fourths of the crop goes into the silo. Hay is 10 per cent above the normal in quantity and of good quality. Hungarian grass, millet and corn are the principal forage crops grown. Market-garden crops are in very good condition. Apples and pears are one-fourth of a full crop. Pasturage is in fair condition. Rye, oats and barley are full crops.

Barre (John L. Smith). — Potato bugs are doing some damage. Corn is very good though a little late and nearly all will go into the silo. Hay is an extra good crop of good quality. Peas and oats, corn and millet are our principal forage crops. There was a good crop of apples last year, so the trees are not bearing heavily this year, but the fruit is smooth and of good size. Pastures are holding out well. Oats are not as heavy a crop as usual; other grains not grown.

Hubbardston (Chas. C. Colby). — Indian corn is looking well but is very backward; nearly all will be ensiled. The hay crop is above the average in quantity and of good quality. There is a larger acreage than usual of oats, Hungarian grass and millet for forage. Potatoes are late but promise a large yield. Pastures are in excellent condition, more pasturage than stock. The fruit crop will be below the average, because of injury from late frosts.

Winchendon (Arthur Stockwell).— Potato bugs are doing some damage. There will be a good crop of corn. There is a large crop of hay and it is being secured in fine condition. Market-garden crops, including potatoes, are in good condition. There will be a good crop of fruit. Pasturage is in fine condition.

Fitchburg (Jabez Fisher). — The pear psylla is doing some damage. Indian corn is in fine condition. The hay crop is larger than usual and of fair but not superior quality. Yield and prices for market-garden crops fairly good. Apples and pears are showing quite well; peaches not so good; no Japan plums and few others; grapes moderate. Pasturage is in very good condition.

Westminster (Alden J. Foskett). — No insects are troublesome. Indian corn is very backward. There is a large quantity of hay and it has been secured in good condition. Oats and barley are our principal forage crops and are in good condition; oats ripened earlier than usual. Market-garden crops are little grown, but are in good condition. There will be a fair crop of apples and pears. Pasturage is in A 1 condition. Rye, oats and barley are good crops.

Bolton (H. F. Haynes). — Potato bugs are doing some damage. Corn is a good crop but is late; probably 25 per cent of the crop goes into the silo. There is about an average hay crop of good quality. Japanese millet is the principal forage crop grown. Potatoes look well, but none have been dug as yet. Pastures are in good condition. Oats rusted badly; no barley sown except for fall feeding.

Worcester (H. R. Kinney). — Potato bugs are doing some damage. Indian corn looks well, but is rather late; most of it will go into the silo. The hay crop is large and of good quality. Corn and millet, with some turnips, cabbages and barley, are grown for forage. Vegetables have all been very late, yield fair, prices good. Apples look finely; pears light; peaches and plums very light; grapes fair. Pasturage is in better condition than usual. Rye was a good stand but oats rusted. Potatoes do not promise a heavy crop.

Auburn (Wm. Gilbert). — Potato bugs are doing some damage. Corn is later than usual, but promises a good crop; about 90 per cent will be put into the silo. Hungarian grass and Japanese millet are our principal forage crops. Hay is a good crop, both in quantity and quality. Market-garden crops are little raised Potatoes look well, none harvested as yet. Pastures were never better at this time of year. Rye is a good crop; oats very poor.

Upton (B. A. Jourdan). — Potato bugs are doing some damage.

Corn is looking finely and only a small part will be ensiled. The hay crop is good and of fine quality. Clover and corn are our principal forage crops. Garden crops are fine and potatoes look well. There will be good crops of apples, pears, grapes and cranberries. Pasturage is in good condition. Rye, oats and barley are fair crops.

MIDDLESEX COUNTY.

Sherborn (N. B. Douglas). — Potato bugs are doing some damage. Indian corn looks well and one-half or more of the crop will go into the silo. There is not a full crop of hay. Oats, barley, Hungarian grass and corn are the forage crops grown; oats rusted badly; other forage crops promise well. Potatoes look well, but none dug as yet. Apples half a crop; no plums; grapes a full crop. Pasturage is in good condition. Rye, oats and barley are average crops for forage.

Marlborough (E. D. Howe). — Brown-tail moths and potato bugs have done some damage. Indian corn is a little backward; fully half the crop goes into the silo. Quantity of hay crop 110; quality 100. Peas and oats are our principal forage crops and are in good condition. Private gardens look well. Apples 60 per cent of a full crop; pears 50 per cent; peaches 25 per cent; plums 100 per cent; quinces 75 per cent; grapes 100 per cent. Frequent rains have kept the pastures in prime condition. Rye, oats and barley are full average crops.

Stow (Geo. W. Bradley). — Potato bugs are doing some damage. Corn is backward, but is coming along rapidly at present; perhaps one-fourth the crop will be ensiled. Quantity and quality of the hay crop both better than for some years. Oats and Hungarian grass and Japanese millet are our forage crops and all are looking well. No early potatoes raised and very few market-garden crops. Apples and pears about three-fourths crops; other fruits not very plenty. Pastures are looking well for the season. Rye and oats are about average crops. Squashes were planted quite freely this season and are looking finely at present.

Littleton (Geo. W. Sanderson). — Potato bugs are doing some damage and we have been troubled by the brown-tail moth. Indian corn is in favorable condition and about three-fourths of the crop will go into the silo. There is more than an average crop of hay, of good quality. Millet, and Hungarian grass are the principal forage crops and are in good condition. Market-garden crops are looking well; but few potatoes have been harvested. The apple crop does not look so favorable as earlier in the season; pears are good; peaches, plums, grapes and cranberries do not look favorable. Pasturage is in good condition. Rye, oats and barley are average crops.

Groton (Chas. H. Berry). — Rose bugs and potato bugs are doing some damage. About three-fourths of the corn crop is raised for ensilage. There is a very heavy crop of hay of good quality. Oats, barley and Hungarian grass are the forage crops grown and they are

looking finely. The condition of market-garden crops is very favorable, but none have been harvested. Early apples will give a large crop; late apples half a crop; some pears and peaches; grapes a small crop. Pasturage is in very fine condition. Rye, oats and barley are about average crops.

Peppercll (W. F. Dennen). — Potato bugs are doing some damage. Indian corn is looking very well considering the lateness of the season; two-thirds of the crop goes into the silo. There is a very good hay crop of good quality. Millet and barley are the principal forage crops grown and are looking well. We have few garden crops here, but potatoes promise well. There will be very little fruit of any kind. Pastures are in very good condition. Rye, oats and barley are raised principally for forage.

Billerica (Geo. P. Greenwood). — Insect pests are not very active. Corn is raised only for silage and looks very well. There is about an average hay crop of very good quality. Market-garden crops look well. Apples are a very large and fair crop; pears, peaches and plums light; cranberries good. Pastures are in good condition. Oats rusted badly.

Concord Wm. H. Hunt). — The elm-tree beetle is doing considerable damage and the brown-tail and gypsy moths are about. Indian corn is looking well and very little is put into the silo. The hay crop is excellent in quantity and quality. Rye, barley and oats all look well. Garden crops look well, including potatoes. The apple crop will be medium; pears good. Pasturage is looking well. Rye, oats and barley have done well.

Stoneham (J. E. Wiley). — Gypsy moths are doing damage. Very little Indian corn is raised. Hay is above the average in quantity and quality. Market-garden crops are above the average in yield and price and potatoes promise well. Apples poor crop and grapes good. Pastures are in fine condition.

Newton (G. L. Marcy). — Elm-tree beetles are doing considerable damage. Indian corn is not raised to any extent. The hay crop is good in quality and average in quantity. Barley, oats, corn and millet are the forage crops grown and are in good condition. Market-garden crops are generally in good condition; wax beans spotted a good deal. The prospect is good for all kinds of fruit. Pasturage is in good condition.

ESSEX COUNTY

Salisbury (Wesley Pettengill). — Potato bugs are doing damage; very few other insects. Corn is looking finely, having made rapid growth of late; very little goes into the silo. There is a record-breaking hay crop; quality not as good as some years. Corn, millet and Hungarian are our principal forage crops, with some rye, oats and barley, and all are looking well. Market-garden crops normal and prices good; potatoes look well except on very low ground. Apples poor; pears good; peaches good; plums poor; grapes good; blueberries heavy

crop. Pastures were never better at this time of year. Rye, oats and barley look well as forage crops.

Haverhill (Eben Webster). — Squash bugs and cucumber beetles are doing some damage. Indian corn is in good condition and two-thirds of the crop will go into the silo. The quantity of the hay crop is not quite up to the normal, but the quality is good. Pastures are in good condition. Corn, oats and peas are the principal forage crops and are looking well. The yield of potatoes promises to be good. Rye, oats and barley are about average crops.

Groveland (A. S. Longfellow). — Potato bugs are doing some damage. Indian corn is looking well; perhaps one-third of the crop will be ensiled. There is a full crop of hay, but the quality is inferior. Corn is the principal forage crop raised, with some oats, and both are in satisfactory condition. Potatoes are in good condition. A full crop of apples is promised; also of pears; some peaches. Pasturage is good owing to frequent rains. Rye, oats and barley are raised only for forage and are fully up to the average.

Hamilton (Geo. R. Dodge). — Potato bugs seem more plentiful than usual. Corn is backward though it has made good growth the past few weeks; all of the crop is put into the silo. Hay is a good average crop of good quality. Oats, millet and corn are the crops grown for forage and all are in good condition. Market-garden crops look well, with prices favorable. Apples and stone fruits are dropping badly and the yield will fall short of last year. Pasturage is good, but cows are shrinking some. Oats for forage were extra good.

Manchester (John Baker). — Gypsy and brown-tail moths have done some damage. Indian corn is a good crop and none is put into the silo. The hay crop is good in quantity and quality, but the weather is poor for getting it. Corn, oats and barley are the principal forage crops grown and are in good condition. Market-garden crops are in good condition, with prices better than usual. There will be about a medium crop of fruit. Pastures are in first-rate condition. Rye, oats and barley are about average crops.

Danvers (Chas. H. Preston). — Gypsy moths are doing some damage. Corn is in good condition and a large part of the crop goes into the silo. Quantity of hay crop above average and quality good. Oats and peas, barley and corn are our principal forage crops. A great deal of sweet corn is fed or put into the silo after marketing the ears. Market-garden crops are in good condition and bring fair prices. Apples are below an average crop; few pears or plums; some peaches and grapes. Pasturage is in good condition. Rye, oats and barley are good crops.

NORFOLK COUNTY.

Cohasset (Philander Bates). — Potato bugs are doing some damage. Indian corn is not grown here. The hay crop is an average one in quantity and quality. Corn and millet are the principal forage crops grown.

Market-garden crops are in good condition. The prospect for fruit of all kinds is good. Pasturage is good, rains having kept the feed green. Rye, oats and barley are not grown here. Onions are raised, but are mostly sold near home during the summer.

Canton (E. V. Kinsley). — Cabbage worms and potato bugs are doing some damage. Corn is looking better than usual; very few farmers here have silos. Quantity of hay crop average, quality poor, very bad hay weather. Corn, Japanese millet, Hungarian grass, oats, rye and peas are the principal forage crops and all are doing well. Potatoes are looking unusually well, but a trifle late; other market-garden crops good and prices good. A fair crop of fruit is promised. Pastures are in very good condition. Oats are looking poorly where sown for grain. The supply of milk has been full, but is falling off fast.

Westwood (Henry E. Weatherbee). — Potato bugs have been very thick and cut worms have done considerable damage. Corn is looking well, but is rather late. There is a good crop of hay of good quality, but it is not going into the barns in very good condition, owing to bad weather. Hungarian grass, Japanese millet and corn are raised for forage and are looking well. Potatoes are looking very well, few being dug as yet. Market-garden crops are yielding well. Apples, pears and grapes will be good crops; peaches and plums light yields. Pastures are holding out well, owing to frequent rains. Oats were a light crop, owing to rust; rye is a good crop; very little barley raised.

Millis (E. F. Richardson). — Rose bugs, potato bugs and the elm-leaf beetle are doing some damage. Indian corn is in fair condition and three-fourths of the crop will be ensiled. There is a large hay crop of good quality. Oats and peas, Hungarian grass, millet and corn are the forage crops grown. Market-garden crops yield well and bring fair prices. Apples, pears, peaches and cranberries promise good crops; quinces and grapes fair. Pastures are in fine condition. Oats rusted, but rye and barley are fair crops.

Franklin (C. M. Allen). — The elm-leaf beetle is doing damage on a few trees. Corn is a little late, but is making exceptional growth; nearly all the crop is raised for the silo. The heavy crop of hay has been somewhat damaged by wet weather. Millet and barley are the principal forage crops grown and are looking finely. Market-garden crops have done very well and brought fair prices. Fruit will be a medium to poor crop. Pasturage has been fine this year. Rye, oats and barley are more than average crops.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — Potato bugs are doing some damage. Indian corn is in good condition and about half the crop will be ensiled. The hay crop is about average in quantity and quality. Corn and millet are the principal forage crops grown. Potatoes are not yet harvested, but look finely. No apples; other fruits normal. Pastures are in good

condition. Rye, oats and barley are fairly good crops. The season so far has been very favorable.

Seekonk (JOHN W. PECK). — No serious damage from insects. Indian corn, where grown, is excellent; two-thirds of the crop at least will go into the silo. The hay crop is very good. Hungarian grass and barley are the leading forage crops grown. Market-garden crops are excellent so far, with prices better than usual as a whole. All fruits except cranberries are doing well. Pasturage was never better at this date. Rye, oats and barley are average crops. The prospect is good for a second crop of hay.

Dighton (JAMES N. PAUL). — Potato bugs are prevalent and elm-leaf beetles are doing much damage to elm trees. Indian corn is in good condition; very little grown for the silo. Quantity and quality of the hay crop about normal, but injured by wet weather in making. Corn, oats and barley are the principal forage crops grown and are in good condition. Potatoes and onions are looking poorly; other market-garden crops look well; those harvested have yielded well, but sold at low prices. Apples, pears, plums and quinces look poorly and will be very small crops. Pastures are in good condition. Strawberries yielded the largest crop in years, but sold at very low prices, many fields hardly paying for picking and marketing. There is a large acreage of tomatoes and squashes here and both are looking well at present.

Westport (ALBERT S. SHERMAN). — Potato bugs and grasshoppers are doing some damage. Corn is looking exceedingly well; no silos here. The hay crop is very heavy, but the quality was injured by frequent showers. Corn and oats are extensively raised for forage and are in fine condition. All garden crops are doing well, including potatoes. Apples not plenty; pears and peaches promise good crops; plums, quinces and cranberries not much grown; grapes abundant. Pasturage never was better at this season. Rye is very good, but late oats were injured by rust.

Dartmouth (L. T. DAVIS). — Insects have caused very little trouble. Corn seldom looked better, though a little late; perhaps three-fourths of the crop is grown for the silo and for fodder. There is a good average yield of hay, but the quality is not of the best, as it has been hard to make it owing to rain. Corn, oats and peas and barley are the forage crops grown and are looking finely. Market-garden crops are in good condition with average prices. The fruit crop is almost an entire failure. Pastures still hold out fairly well. Rye, oats and barley are good crops.

PLYMOUTH COUNTY.

Hanover (HARRISON L. HOUSE). — Striped squash bugs are doing some damage. Indian corn is in fair condition; no silos in town. Quantity of the hay crop medium and quality rather poor, owing to bad weather for making. Oats and cow peas are the principal forage crops grown and are in good condition. Market-garden crops are fair

yield with average prices. The prospect for fruit is poor, except for cranberries. Pasturage is in good condition. Rye, oats and barley are normal crops.

West Bridgewater (C. P. Howard). — Corn looks well and three-fourths of the crop will go into the silo. An average crop of hay has been secured. Corn, oats and peas, millet and barley are the forage crops grown. All garden crops look well. Insects have injured all kinds of fruit badly. Pastures are in very good condition. All grain is yielding well.

Duxbury (R. T. Randall). — Potato bugs are doing some damage. Corn is in very good condition; no silos here. Hay is better than an average crop, but the weather has been poor for making. Oats and millet are the principal forage crops grown. Early potatoes are a good yield; prices about the same as usual. Apples will be a good crop; grapes plenty; cranberries good. Pasturage is in good condition. Rye, oats and barley are average crops.

Halifax (G. W. Hayward). — Potato bugs are doing some damage. Corn is improving and bids fair to be a good crop; no silos in town. Quality of hay crop fine, but yield uneven. Corn and barley are the principal forage crops and are in excellent condition. Potatoes are looking finely. There will be very few apples and other fruits, except cranberries. Feed in pastures is luxuriant. Rye and barley have yielded finely.

Carver (J. A. Vaughan). — The cranberry vine worm is doing some damage. Indian corn is in good condition; no silos here. There is a good crop of hay, but the weather has been poor to make it. Condition of pastures excellent, but some millet is raised for forage. Potatoes and all garden crops are looking well. There is an average crop of apples and pears. Pasturage is in excellent condition. Cranberries have suffered from frost and insects, but an average crop is expected.

Lakeville (Nathaniel G. Staples). — Potato bugs are doing some damage. Indian corn is in good condition and possibly 10 per cent of the crop will be ensiled. Quantity of the hay crop a little better than the average and quality good. Corn is the principal forage crop grown and is in good condition. Market-garden crops are good with prices better than usual. The prospect for fruit of all kinds is good. Pasturage is in good condition. Rye, oats and barley are fair crops.

Mattapoisett (E. C. Stetson). — Potato bugs and cut worms are doing some damage. Corn is in good condition; no silos here. There is a very good hay crop of fair quality. Corn and millet are the principal forage crops grown and are in good condition. Market-garden crops are as good, or a little better than the average. Very few apples; pears, peaches, plums, quinces and grapes quite good; cranberries not very promising. Pasturage is in very good condition. Rye, oats and barley are about average crops.

BARNSTABLE COUNTY.

Bourne (David D. Nye). — Potato bugs are doing some damage. Corn looks well, but is somewhat backward; no silos in town. The hay crop is fully up to last year in quantity and of fair quality. Corn, oats, millet and some roots are raised for forage. Market-garden crops are fair; few potatoes harvested but they promise very well. There will be small crops of apples, pears, peaches, plums and quinces; grapes and cranberries fair. Pasturage never looked as well as at present.

Barnstable (John Bursley). — Green-headed flies are annoying domestic animals exceedingly. Indian corn is growing very rapidly; very little for the silo. Quantity of the hay crop 15 per cent above the average, but quality 15 per cent below. Oats as a forage crop have done fairly well and some millet is sown. Peas have made a large yield; potatoes very light; prices fair. Apples and pears small crops; peaches fair; grapes and cranberries looking very well. Pastures are in good condition. Rye, oats and barley are very good crops.

Chatham (E. Z. Ryder). — Potato bugs, codlin moths and squash bugs are doing some damage. Corn is very good and only a small part of the crop will be ensiled. Hay is a fair crop, but has been injured very badly by wet weather. Corn, oats and millet are the principal forage crops grown, and all are looking well. Market-garden crops are backward, but prices rule higher than usual. Apples will give a small crop; pears average; other fruits fair; good outlook for cranberries. Pasturage is in very good condition. Rye, oats and barley are average crops.

Orleans (Freeman E. Snow). — Potato bugs are the only insects doing damage. Corn is looking well; no silos about here. There is a good hay crop, both in quantity and quality. Millet, corn, etc., are grown for forage and are looking well. Potatoes look well and the yield bids fair to be good, prices good. All fruits are looking well; cranberries hardly out of bloom. Pasturage is getting rather short because of lack of rain.

Truro (John B. Dyer). — Potato bugs and striped squash bugs are doing some damage. Very little Indian corn is raised and none for the silo. The hay crop is better than usual. Forage crops are little grown. Market-garden crops are fairly good, better than average owing to wet weather. Apples, pears, peaches and grapes are good, and cranberries promise unusually well. Pastures are in good condition. Rye, oats and barley are good crops, but are little grown.

DUKES COUNTY.

West Tisbury (George Hunt Luce). — Potato bugs are doing some damage. Indian corn is in good condition; only a small portion of the crop will be ensiled. Hay is above the average in quantity, but

the quality suffered for lack of good weather to harvest. Corn is the principal forage crop grown. Potatoes promise to be a good crop. There will be a fair yield of fruit. Pasturage is in very good condition. Oats are somewhat rusty.

NANTUCKET COUNTY.

Nantucket (H. G. Worth). — Potato bugs are doing some damage. Corn is looking finely; no silos in this county. The hay crop is good, but wet weather has injured the quality. Oats and fodder corn are the principal forage crops grown. All market-garden crops are looking finely and bringing good prices. Pastures were never in better condition. Oats are the only grain raised in any amount and have rusted somewhat on account of so much wet weather.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

CLOVERS: THEIR VALUE, CHARACTERISTICS OF VARIETIES AND METHODS OF PRODUCTION.

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Most farmers who keep stock appreciate the fact that the clovers are among the most valuable of all the forage crops that can be produced in Massachusetts. The reasons why the clovers are so important are not always clearly understood. In this article the writer will attempt to make these reasons clear. Not infrequently, in personal interviews or by letter, the writer's attention is called to the fact that in some localities farmers are meeting with poor success in their efforts to produce this valuable class of forage crops. The reasons for comparative failure in efforts to produce clover doubtless vary in different localities, and it may not be possible for one unfamiliar with conditions to give directions which will always lead to success. Certain conditions, however, which are well established, must be provided, or failure will be the result. An effort will be made to make a clear statement as to what these conditions are, for it is in many cases at least true that comparative failure in the effort to produce clovers is due to a failure to observe some one or more of these conditions.

REASONS WHY CLOVERS ARE ESPECIALLY VALUABLE ON THE FARM.

It is the writer's opinion that on farms where stock is kept it will usually not be profitable to use clovers as green manures. They can be better utilized on such farms by cutting and feeding to stock, or by pasturing. On the other hand, where but little stock is kept, and especially where the production of apples, peaches or other tree fruits is an important part of the farm business, the clovers are among the most valuable crops which can be used for cover, to supply humus, and to enrich the soils in nitrogen. It is now generally understood that under right conditions clovers are capable of taking the nitrogen which they need from the air. In this respect the clovers and the other plants of the clover family are superior to any other crops which can be used for similar purposes. It is, then, this single fact, that the clovers can take the nitrogen they need from the air while crops of other families cannot do this, which renders them so much more valuable than most other crops for cover and green manuring. It is the purpose of this

article to consider especially clovers as forage crops. A brief statement of the principal reasons for their great value as such may be useful.

1. The cost of manures and fertilizers needed to produce them is low. As has just been stated, the clovers under the right conditions take their nitrogen from the air. They draw upon the soil simply for the mineral constituents of plant food, such as lime, phosphoric acid, potash and magnesia. These mineral elements of plant food are relatively abundant and can be purchased at comparatively low prices. Nitrogen, on the other hand, if purchased in the form of either manure or fertilizers, will usually cost from 16 to 18 cents per pound. Phosphoric acid and potash cost only 3 to 5 cents per pound, the price varying according to the material selected. Lime and magnesia cost still less. The latter, indeed, need seldom be purchased, for it as well as the other mineral constituents found in plants is almost invariably sufficiently abundant in all soils. Striking evidence that the manurial cost of producing clovers is low is afforded by the results in one of the fields of the Hatch Experiment Station. A plot in this field was manured annually for fifteen years at the following rates per acre: dissolved bone black 320 pounds and muriate of potash 160 pounds. The crops raised on this field, in the order of their production, were as follows: corn, corn, oats, hay, hay, corn, rye, soy beans, white mustard, corn, corn, hay, hay, and corn. The hay crops have consisted in all cases of mixed grass and clovers. During the fifteen years referred to, the entire field has received two applications of lime, at the rate in each case of 1 ton to the acre. The annual cost of the dissolved boneblack and muriate of potash applied to this plot has been at the rate of about $5.50 per acre, while the cost of the two applications of lime has been sufficient, spread over the fifteen years, to amount to about $1 per acre annually. The total cost of manuring this land, then, has been at the rate of about $6.50 per acre annually. This plot has invariably produced good crops. Its fertility does not appear to have decreased. In 1902 it produced shelled corn at the rate of 56 bushels to the acre. Clover has always predominated in the hay crops. The yield of hay (two crops) in 1901 was at the rate of 3,400 pounds to the acre. That portion of this field which has not been manured during the fifteen years will at present yield corn at the rate of about 7 bushels of shelled corn per acre and hay at the rate of about 600 pounds.

Some of the fields of the Massachusetts Agricultural College farm are kept permanently in mowing. A number of acres have not been broken up for about twenty-four years. In 1889, when the writer took charge of these fields, they were producing rather light crops of Kentucky blue grass, much mixed with the white daisy. For the last few years these fields have been subdivided into plots, and various combinations of fertilizers employed. To a considerable area, the annual application per acre is at the rate of basic slag meal 500 pounds, and a potash salt sufficient to furnish 75 pounds of actual potash per acre. The areas thus manured have steadily improved under the treatment received. At the start there was but little clover. Under the system of fertilizing followed, the proportion of clover has steadily increased. The daisies have almost entirely disappeared, while the grass as well as the clovers, though in less degree, has improved. The annual cost of the fertilizers used amounts to about $7 per acre. The soil of these fields is natural grass land and is quite well adapted for clovers as well. The product under this system of manuring ranges from about 2 to 2½ tons per acre in two crops. During the present season these fields have given one of the best as well as one of the heaviest crops produced since 1889.

2. Clovers are of especial value upon the farm as stock feed on account of their exceptional richness in protein. Protein, as is well understood, is the most valuable of the food constituents, being essential to the formation of flesh and undoubtedly influencing milk production to a greater degree than any other food constituent. Hay made from grasses is likely to contain only 6 to 8 per cent of protein. Hay made from clovers, on the other hand, is likely to contain from 12 to 14 per cent. Every farmer, however, who has had experience knows the superior results which can be obtained in feeding when good clover hay is available. This point, therefore, needs no further discussion.

3. The production of clovers under the right conditions enriches the soil. This is true even when the crops produced are cut and removed. Clover, as has been pointed out, is capable of taking its nitrogen from the air. Not only does it take from the air under the right conditions a large proportion of the nitrogen which becomes a part of its stems, leaves and flowers, it takes also large amounts of nitrogen which become a part of its roots. The 3 tons of clover hay which an acre of good clover land will produce in a year will contain about 120 pounds of nitrogen, and yet after the production of this crop the soil will contain more nitrogen than it did at the start if conditions have been right, for the roots and the stubble of the clover are very rich in this element, and when these decay, the nitrogen they contain becomes a part of the capital of the soil, and this nitrogen has been taken from the air and thus brought within the reach of subsequent crops through the agency of the growing clover.

In one other direction the growth of clovers is likely to result in soil improvement. Most of them are very deep-rooted plants. They have long, thick tap roots which run down into the soil. As a consequence, the sub-soil is opened up and mellowed. The availability of the stores of plant food in it as well as in the surface soil is increased. Crops which follow clovers are likely to send their roots deeper into the soil than when following grasses which are more shallow rooted. Under these conditions crops are less likely to suffer from drought. They gather food from a wider soil area, and are consequently more certain and less dependent upon applied fertility. The fact that other crops almost invariably do well when following a good crop of clover is generally understood among farmers of experience, and these points, therefore, do not appear to need further discussion.

4. The fact that when a clover sod is broken up the following crops do exceptionally well has just been pointed out and is generally understood. That the grasses growing in the field with clovers in permanent mowings will ultimately derive great benefit from the clovers which have grown with them is not so generally understood. That such is case, however, cannot be doubted. European experience has demonstrated it, and many observations in America confirm the results of European experience. It will be of interest to consider how this effect is produced. As has been pointed out, a suitable selection of fertilizers will maintain a large proportion of clovers in permanent mowings. It must be remembered, however, that the individual clover plants are not long lived. Most of our clovers are short-lived perennials. The single plant will not, as a rule, live more than two or three years. Clover is permanent in the mowing simply because some of the seed almost invariably ripens previous to the cutting of the crop. Considerable numbers of individual plants undoubtedly die every year. It is the decay of the roots and stubble of these plants which accounts for the benefit to the grasses. Grasses thrive where nitrogen in avail-

able forms is abundant in the soil. The decay of the roots and stubble of clovers brings this element within the reach of the grasses, and thus the clovers, which first help themselves by drawing nitrogen from the air, in their death and decay help the grasses as well. Any permanent mowing which at the outset is brought into good condition to produce clovers in a few years will also be in a condition to produce a strong growth of grasses as well as clovers.

For four important reasons, then, the clovers are among the most valuable of forage plants: First the manurial cost of their production is exceptionally low. Second, they are richer in protein than most of the forage crops; far richer than the grasses. Third, they enrich the soil in nitrogen as well as sub-soil it, so that the following crops are almost invariably good. Fourth, in permanent mowings they ultimately so enrich the soil in nitrogen that the grasses as well as the clovers make vigorous growth.

The Kinds of Clover.

Crimson Clover (Trifolium Incarnatum).

Crimson clover is an annual or a winter annual.* Whenever crimson clover can be grown as a winter annual it is of much value, but the peculiarities of our winters and especially of our springs are such that crimson clover is not generally successful as a winter annual. In localities where it is hardy, its special value is due principally to the fact that it starts into growth the following season much earlier than the other clovers. Crimson clover may be grown in Massachusetts as a spring-sown crop, but if it must be sown in the spring, it will not be earlier than the other clovers, and is not likely to yield so heavily as they. It does not appear likely, therefore, that crimson clover will prove of much value in our agriculture.

Medium or Common Red Clover, and Mammoth Red Clover.

These two kinds of clover are best described together as the peculiarities of each are best brought out when studied in contrast with those of the other. These two kinds of clover resemble each other very closely. Typical specimens of the two show well-defined differences, but these two types of clover seem to run together, and there are many forms intermediate between the types. The product of commercial samples of seed sold under the two names is often indistinguishable, even by experts. Typical specimens show the following differences. The leaflet of the red clover is nearly round, comparatively smooth, with a whitish approximately crescent-shaped mark on the upper surface. The mammoth clover has a leaflet relatively narrow, elliptical, more hairy than that of the common red clover and without the whitish mark. The more important practical differences are that the mammoth clover is somewhat coarser and taller than the common and a little later. It is, therefore, somewhat better suited for sowing in mixture with timothy and redtop than the common red clover, for the latter is usually overripe before the timothy and redtop are sufficiently mature to cut. Both of these clovers are rather short-lived perennials, but it is nevertheless possible, as has been indicated, to produce hay for a long series of years in permanent mowings in which these clovers will

* Those plants are designated winter annuals which, when sown in late summer or fall, make a moderate growth but do not blossom that season; but which will pass through the winter successfully, blossom and form seed the following spring and then die. Winter rye is an example.

be fairly prominent. This is possible even without sowing the seed, for when the rowen crop is usually harvested a portion of the heads are commonly ripe. The seeds are scattered from these heads and from these seeds each year come new plants. Accordingly, though the older plants die, their place in the mowing is taken by the plants which grow from these accidentally scattered seeds.

Alsike Clover.

Alsike clover was once supposed to be a hybrid between common red clover and white clover. It is now known that this is not the case. It is a distinct species. In characteristics, however, it is intermediate between the common red and the white, showing a wonderful blending of the qualities of the two. It has the upright habit of growth of the red clover, though it is not so coarse. The head is shaped like the head of the white clover, while the color of the flowers is pink. Alsike clover is of much value in mowings, and seems to be especially adapted to the stronger and moister soils, where it does better than the common red. Being finer, it cures more easily than either the common red or the mammoth clover, producing hay of very superior quality. It is, moreover, of great value as a honey crop, for the honey bee can reach the nectar in its flowers, which it can seldom do in the case of the red and mammoth clovers. In a few respects, alsike clover appears to be somewhat inferior to the red and mammoth varieties. In many cases it does not persist so long, nor does it appear to yield so heavy a second growth. The variety, however, is of such value that it should always be included in mixtures of seeds for the stronger and moister soils, where hay including clover is desired.

White Clover.

This plant is too well known to need description. Unlike the other clovers it is perennial. Its ability to persist is due to the fact that its stems creep upon the ground, rooting at the joints wherever they come in contact with the soil. This clover is, therefore, constantly renewed as a result of this habit of growth. This same habit renders this clover less valuable in mowings than the others which have been spoken of. In all permanent mowings, however, white clover will contribute greatly to the yield and to the nutritive value of the product. In such mowings, it appears invariably to come in naturally if the soils are adapted to it and if the necessary mineral elements of plant food are abundantly supplied. White clover is of great value in pastures. A turf in which white clover is abundant is most highly relished by all classes of stock and the feed is highly nutritious. The white clover, moreover, is much the most valuable of all the clovers for bees. It secretes nectar abundantly, and the honey made from it stands highest in our markets, being, indeed, almost everywhere looked upon as the standard of excellence among the different grades of honey.

Varieties of the Different Species.

Critical examination of either grasses or clovers in the field will reveal the fact that the different plants exhibit considerable variation. In the United States, while we have countless varieties of vegetables, grains and fruits, we have thus far made little effors to produce select and more perfect varieties of our different species of forage crops. We have been satisfied to go on year after year sowing a mixed or average seed.

The tendency to vary among the different species of clovers is apparently not less than it is in many other species of cultivated plants. It cannot be doubted that by intelligent effort greatly improved types or types suited to widely different purposes may be produced. Foreign countries are ahead of us in this direction, and on the Experiment Station farm at Amherst there is now a considerable collection of varieties of clovers, of the red, alsike and white species respectively. The different varieties exhibit wide differences one from the other, and some of them have great apparent promise. These varieties of clovers have not been under trial sufficiently long to justify sending out any of them but it is among the possibilities of the near future that we shall have highly improved types of the different leading species of clovers, types which are suited to varying conditions or to different purposes. Meanwhile, in conclusion upon this topic, the intelligent clover grower is urged to keep his eyes open for promising plants, and finding them, either to propagate from them himself, or to send them to the Experiment Station, where they will be given careful trial.

The Conditions Essential for the Most Successful and Profitable Growth of the Clovers.

1. *Soil Conditions.* — Successful clover growing is impossible unless the soil conditions are right. These plants will thrive upon a considerable variety of soils as regards texture and composition, but for the best results a deep, mellow and fairly retentive soil which is well drained is essential. Clovers will absolutely fail if there is any considerable proportion of free acid in the soil, or, in farmers' language, if the soil be "sour." If blue litmus paper in contact with moderately moist soil turns red as it absorbs the moisture, this is an indication that the soil is sour, but the farmer will be wise if before incurring any considerable expense for the correction of acidity he makes a careful test for himself. One of the best farmer's tests can be carried out as follows: take two small plots of land in a field supposed to possess "sour" soil and plow them both. Plots containing about one square rod each will be sufficient. They should, of course, be located in a representative portion of of the field. After plowing spread about 20 pounds of builders' lime or R-R agricultural lime on one of the plots. Work this lime in deeply with the wheel harrow, then manure or fertilize both plots alike and heavily, and plant table beets. If the soil is sour, these beets will grow much better on the plot to which the lime has been applied than on the other, and it is safe to conclude that a heavy application of lime will be essential before clovers will flourish. If the experiment indicates that lime is essential, it will probably be needed at about the rate of 1 ton to the acre; the weight referred to to be taken before slacking. If air-slacked lime is used, 1½ tons to the acre will not be too much. The best season for applying lime is autumn or early spring. As a rule, it should be spread upon the plowed land and deeply worked in with the disc harrow.

2. *The Use of Much Manure inexpedient.* — The writer is aware that splendid clover is often grown where the land is heavily dressed with manure. He is not disposed to deny the possibility of producing fine crops of clover on manure alone. He would, nevertheless, urge that manure alone be not depended upon as a means of enriching clover land. The leading and most valuable element of plant food in manures is nitrogen. The application of this for clovers in any considerable amounts is unnecessary. If clovers are grown on manures, they will feed upon the nitrogen in the manure. They will not draw from the

air for that element. Growing clover upon manures, therefore, is not the best economy. Moreover, it is important to point out that the grasses with which clover is most generally grown are greatly invigorated by heavy dressings of manure. A strong, rank growth of the timothy and redtop will tend to crowd out the clover. Fine crops of hay may be produced, but it will not be clover hay, nor rich in clover. The writer would not be understood as urging that manure should never be used on land which is being prepared for clover, although he would strongly advise against top-dressing clover with manure. On soil which is naturally poor in nitrogen, manure may wisely be used in moderate amounts for crops preceding clover. Heavy dressings would be a mistake. It is far better to use the manure in only moderate or small amounts, and to use it in connection with materials which will supply lime, phosphates and potash.

3. *The Supply of the Mineral Elements of Plant Food should be Liberal.* — We should not forget in considering the best means of growing clover that the stock of nitrogen in the air from which it is capable of drawing is practically unlimited. The more of this nitrogen we can gather in the crop and in its roots and stubble the better. In a certain sense, this trapped atmospheric nitrogen is so much clear gain. In considering this point it must be remembered that the clover plant like other plants must take the different food elements in a certain balanced proportion. Though the nitrogen the clovers need is practically unlimited in amount, they cannot make a heavy growth unless provided with a great abundance of the elements which they must take from the soil. It is clearly unwise to lessen our chances for gathering the valuable element nitrogen from the air through failure to supply the soil elements in adequate amounts. The rule, then, in preparing for clover or in top-dressing for clover should be to supply the phosphates, potash salts, lime and possibly magnesia in great abundance. With these present in abundance, and with a soil of such a character that it will furnish suitable conditions and supply the needed moisture at critical times, enormous crops of clover may be produced.

4. *The Co-operation of Bacteria is essential.* — One of the most important discoveries of recent times is the now generally known fact that the presence of certain bacteria living in symbiotic relations with the clovers and other members of the clover family, and found in nodules on their roots, is essential in order that these plants may draw upon the air for nitrogen. The nodules which in the case of clovers indicate the presence of suitable bacteria are whitish, more or less elliptical bodies of about the size of the head of a small pin. These grow singly or in small clusters, mainly on the smaller roots. They can be readily found by taking up clover plants grown under proper conditions with care not to break off too many of the small roots. Bacteria, as is generally understood, are plants. They are very minute. The bacteria themselves are the veriest dust of the dust. As might be supposed, therefore, they appear to be very widely and freely disseminated, and probably through the air. The slightest currents of air must carry them. The dust from a freshly turned clover sod must contain countless millions of them. In certain quarters it has been urged that failures to produce good clover are frequently due to the absence of suitable bacteria, or to their presence in insufficient numbers. Certain experiments with sterilized soils in Amherst indicate to the writer that clover bacteria are everywhere, and it is not his belief that failures to produce satisfactory crops of clover in this State can often, if indeed they can ever, be attributed to the cause under consideration. The writer has never seen a case where if a soil be brought into proper condition as to

drainage and freedom from acidity, and well stocked with phosphates and potash, clovers have failed to grow, and he has never observed clover plants in any locality and failed to find abundance of nodules on their roots. It is, however, of course a possibility that there may be localities where it will pay to inoculate the soil designed for clover with suitable bacteria. This inoculation may be carried out in either of two ways. First, soil from a locality where clover thrives and where the nodules are known to be abundant may be scattered over the field where the clover is to be sown and immediately harrowed in. Five or six hundred pounds of such soil per acre will be sufficient. Second, a culture of the proper species of bacteria may be used in accordance with directions which will be furnished with it. Such cultures may now be procured either from the United States Department of Agriculture in Washington, or from private dealers. These cultures are known by the name of nitro-cultures, but as each species of the clover family must have its own species of bacteria, it is necessary in ordering to name the plant for which the nitro-culture is needed as well as the area.

The United States Department of Agriculture first sent out cultures in dry form, in small packages containing dried cotton and chemicals to be dissolved in the water in which the cultures were to be started. In very many cases the use of these cultures resulted in absolute failure. The desiccation to which the bacteria had been subjected appeared to have destroyed their vitality. So far as the writer knows, all private companies which are now offering commercial nitro-cultures prepare them in accordance with the system first used by the government, and the presumption is that in many cases these cultures will be found valueless, and for the reason above indicated. The United States government at the present time is preparing cultures in semi-fluid form. These are sent out in sealed glass vials. They have not been sufficiently tried to warrant an expression of opinion concerning their value, but the method, at least judged from a scientific point of view, appears better calculated to yield successful results than the earlier method.

It has been urged that the bacteria sent out in culture form are selected and especially vigorous forms, and that accordingly, even in cases where the soils contain the right species of bacteria, the clover crop may be increased, or may be enabled to draw nitrogen in larger quantity from the air through suitable inoculation with these improved cultures. It does not appear to the writer that this point has been as yet proved, and in conclusion he would go on record as most emphatically advising against the use of cultures for clover, unless, indeed, it is found on experiment that clovers do not develop in any given locality the characteristic nodules.

Fertilizers for Clovers.

In considering this topic we shall do well to consider separately clovers grown in rotation with other crops and clovers in permanent mowings.

For Clovers in Rotation.

Where clovers are grown in rotation with other crops they will occupy the land at most but two or three years. In such cases practically all manure or fertilizer used will be applied previous to seeding. On most farms where stock is kept manure in larger or smaller quantity will be used for the crops which precede the clovers. It has been pointed out that it is a mistake to use manure too freely for the crops which precede

the clover. Application at the rate of 4 to 5 cords to the acre only is desirable. In connection with such applications of manure, materials which supply phosphates, potash and perhaps also lime should be employed. During the past few years large quantities of phosphatic or basic slag meal have been employed on the college farm at Amherst, and with results which are eminently satisfactory. This slag meal should contain about 16 to 20 per cent of actual phosphoric acid. This acid is not in so highly available a form as in acid phosphate or dissolved boneblack. On the other hand, it appears to be more available than the phosphoric acid in any of the phosphatic rocks or even in most of the forms of bone. Besides phosphoric acid, the slag meal contains a large amount of lime, and this, while less effective in correcting the faults of a sour soil than quick lime, must prove valuable in helping to prevent soils which have once been brought into proper condition from becoming sour again. On such soils as those at Amherst the application of slag meal at the rate of some 500 or 600 pounds per acre in connection with such dressings of manure as have been indicated appears to be sufficient. In addition to the slag meal there will be needed on most soils to bring them into suitable condition for producing clovers a fairly liberal application of potash in some form, for this element the 4 or 5 cords of manure will not supply in sufficiently large quantities for the best results with clover. Wood ashes furnish potash in very desirable form, but they are becoming increasingly scarce, and are held at prices which make them a relatively expensive source of that element. It is the practice on the college farm to depend mainly upon some of the German potash salts, and, as has been pointed out in earlier articles on the hay crop, sulfates of potash are found in the long run to give much better results with clover than muriate of potash or kainite. Experiments now in progress in Amherst are furnishing an interesting basis of comparison between the low-grade sulfate of potash and the high-grade. The writer is not yet prepared to recommend the low grade as superior to the high grade, and since the latter furnishes actual potash at the lower cost, it is his belief that it should usually be selected. Comparative observations, however, on crops grown on the two potash salts this year lead me to wonder whether the magnesia of the low-grade sulphate may not ultimately prove valuable. Certainly better clover is seldom seen than that produced on certain of the fields of the college farm during the past year which have been during the past few seasons top-dressed with basic slag meal and low-grade sulfate of potash. If the high-grade sulfate of potash, however, is selected for use in connection with manure in preparing for clover, it is believed that an annual application at the rate of about 150 to 175 pounds per acre will supply the element potash in sufficient quantities for clovers on most soils. These materials (basic slag meal and sulfate of potash) should be mixed after the land has been plowed, spread broadcast and harrowed in.

Fertilizers without Manures.

In some cases the farmer will desire to bring his soil into suitable condition for clovers in rotation by application of fertilizers alone to preceding crops. In such cases the materials which have just been considered should constitute the main reliance, but they should be used in connection with materials which will furnish nitrogen in sufficient quantities for the preceding crops. Both the slag and potash, however, must be used in somewhat larger quantities, and the writer would suggest as suitable for most cases basic slag meal 800 pounds and high-

grade sulfate of potash 200 pounds, though these amounts may, of course, wisely be varied to some extent according to the crop which precedes the clovers. What materials it will be best to use for the purpose of supplying the needed nitrogen for the preceding crop, and in what quantities, it is impossible to say without knowledge as to what that preceding crop is to be. If corn, only moderate quantities of nitrogen would be required, and this may wisely be furnished in materials furnishing this element in forms varying in availability. As a rule, the needed nitrogen may wisely be obtained by a combination of nitrate of soda, tankage and possibly raw bone meal; and for corn, in the proportion of about one part of nitrate to three of tankage and two or three of bone meal. The total quantities of these materials which it will be profitable to use for corn in connection with slag and potash must vary widely with the condition of the soil. Six hundred pounds of a mixture with the different materials in the proportions indicated will ordinarily be sufficient. All these materials, nitrate, tankage, bone, meal, slag meal and potash, may be mixed after the land is plowed, spread broadcast and harrowed in.

Fertilizers for Clovers in Permanent Mowings.

To get permanent mowings to produce hay composed largely of clovers, it will be wise to depend chiefly upon the fertilizers which have been under consideration. Basic slag meal or bone meal should be mainly depended upon as sources of phosphoric acid, and lime and either the high-grade sulfate or low-grade sulfate of potash as the source of potash. Excellent crops can be produced by a combination in suitable amounts of these materials alone, and the clover will comprise a larger proportion of the product if they be used without materials which will supply nitrogen. On the college farm at Amherst crops of hay rich in clover have been produced year after year by an annual top-dressing composed of a mixture of basic slag meal 500 pounds, and either high-grade sulfate of potash 150 pounds, or low-grade sulfate of potash 300 pounds per acre. The product under this annual system of top-dressing shows fairly good grass, with a bottom full of white clover which grows with remarkable luxuriance and attains unusual size. The fields thus top-dressed contain also many plants of the red clovers. These in the crop of the past year seem to be more abundant where the high-grade sulfate of potash was used than where the low-grade had been applied. Basic slag meal is not yet common in our markets. If it be found difficult or impossible to obtain it, bone meal may be substituted for it, but it is not likely that it will permanently hold the land in a condition so favorable for clover as the slag meal, for it does not contain lime in so large proportion. The bone meal, however, furnishes a small amount of nitrogen and this fact may render it somewhat more favorable for grass than is the slag meal.

It seems probable that in most cases somewhat more profitable crops of hay will be obtained if in connection with either the slag and bone meal or the potash salts a moderate amount of nitrate of soda is employed, and experiments in Amherst indicate that from 150 to 200 pounds per acre of this salt in connection with the other materials seem to be as large an amount as in seasons with abundant rainfall may profitably be used on strong and retentive soils. On the lighter soils the nitrate may without doubt be more largely employed with profit.

In top-dressing permanent mowings, whether with the slag meal or bone and potash alone, or with these materials in connection with nitrate, it is the practice at Amherst to mix the materials and to apply

the mixture about the first of May. There can be little doubt that the slag and the potash salt will do the crop of the succeeding season more good if applied in the autumn, but applying them at this time would mean going over the ground twice, once with the mixture of slag and potash, and once with the nitrate. It would, moreover, be found difficult to apply the small quantity of nitrate evenly by itself, and it seems doubtful, therefore, whether in the long run better results will not be secured by applying the mixture of all the materials in the spring.

Seeding to Clover.

As has been pointed out, it is almost invariably best in general farming to sow the clovers in mixture with grasses. Clovers growing alone are not likely to stand up well. If sown in mixture with a stout growing grass, such as timothy or orchard grass, the clovers retain their upright position much better than when growing alone. If, however, for any purpose it is considered desirable to sow clovers alone, the following quantities of seed per acre will usually be sufficient: —*

Red clover,	15 pounds.
Mammoth clover,	20 pounds.
Alsike clover,	12 pounds.
White clover,	8 pounds.

Spring Seeding.

The clovers are sown in spring in either one of two systems. First, it is common practice to scatter clover seed in very early spring on the surface of fields which have been seeded the previous fall either with grain or grasses. Under these conditions the soil cannot be freshly prepared, nor can the seed be covered. As might be expected, therefore, germination is less perfect than under more favorable conditions. When, however, the weather conditions are just right, a fair degree of success is attained by seeding in this way. It is usually best to defer sowing until the winter's frost is out of the ground. Results are most satisfactory when the seed can be sown on a lightly frozen surface which is somewhat honeycombed with the night's frost. If as this frost comes out of the ground, or soon after it comes out, there should chance to come a rain, the seed is much of it carried into the soil and will usually germinate promptly and quite perfectly. Owing to the fact, however, that we are by no means certain to experience these ideal conditions, there is considerable risk in seeding with clover in accordance with this plan. It should be recognized, moreover, that even if the seed germinates well, the clover sown in this way on land seeded to grass the previous fall makes but little showing in the crop of the succeeding season.

Second, the land may be plowed as early in spring as it can be worked and the clover sown either alone or in connection with grass seeds, with or without grain as a nurse crop. Clovers sown in this way usually start well, but whether they be sown with grain as a nurse crop or not, they are subject to peculiar risk and injury during the summer. If sown with grain as a nurse crop this must be harvested usually during July. If sown alone, there will usually be a considerable growth of weeds, and these also, in order to prevent ripening of seed, must be cut at about the same time. The clover which has previously been

* For seed mixtures for various purposes see article on "Hay Crop in Massachusetts" by the writer in the fifty-second annual report of the secretary of the State Board of Agriculture.

shaded either by grain or weeds is in poor condition to stand full exposure to the hot sun of midsummer, and unless rains come within a short time after it is thus exposed, much of it is often killed. This method of seeding, then, leaves much to be desired.

Seeding in Summer or Early Autumn.

The best success in seeding to clovers can usually be counted upon when the work is done in late summer or very early autumn. Dog days furnish ideal conditions for germination and rapid growth. Clovers may be sown at this time either alone or with grasses. If the field can be cleared, plowed and thoroughly harrowed, it can be brought into the very best possible condition, but where clover is to follow corn, it is impossible to remove the corn in season to sow the clover. Under these circumstances seeding in corn appears to be the best plan. The ensilage corn, since it is carried from the field as soon as cut, furnishes conditions on the whole more satisfactory than field corn, with which the young grass and clover will be killed where the stooks of corn stand while curing. In the seventeen years that the writer has had charge of the college farm in Amherst, a good many acres have been annually seeded in corn, and during this entire period there has never been a failure. The culture of the corn should be level. A spike-toothed cultivator should be used at the last cultivation and the seed should be immediately sown. It will not need covering. The best time for sowing in this way is usually between July 20 and August 5. It is desirable to sow the seed before the corn is so tall as to make it difficult to swing the hand over it in sowing. Those who have not tried this method of seeding appear usually to fear that the stubble of the corn will be in the way in harvesting the hay crop, but if the field be rolled the spring following the seeding, no such difficulty will be experienced. Clover sown in this way in the corn becomes thoroughly established before winter, it is very unlikely to winterkill and it will give a full crop the following season.

Selection of the Seed.

The clover seeds upon our American markets appear usually to be of very good quality. European seed dealers have sometimes mixed specially prepared sand of approximately similar color and sizes with clover seeds, but so far as the writer knows this fraud has never been undertaken in this country. In purchasing clover seed, then, it seems necessary only to use care to obtain that which is free from admixture with weed seeds, and which shows good germination. Among the weed seeds most likely to be found mixed with clover seeds are dock and sorrel. These can easily be recognized. There is occasionally a sample of clover seed containing the seeds of dodder, a thread-like parasite which attaches itself to the stems of the clover plants. Where this is abundant the crop is practically ruined. The stems of the dodder straggling from stem to stem unite the different plants so that they cannot be separated. It therefore becomes almost impossible to handle and cure the hay. The presence of dodder, moreover, renders the hay very unpalatable. The seed of the dodder is excessively fine, and in cases where its presence is suspected a sample of the seed should be sent to the Experiment Station for identification.

Curing the Hay.

The first point to be considered in connection with this topic is the proper degree of maturity. Clover is often allowed to stand too late. If it be suffered to remain until a considerable proportion of the heads are brown and the seed ripe, there will be but little rowen, while there is much danger that the roots of the clover will die after the crop is cut. Relatively early cutting, then, — before many of the heads are brown, — is desirable, both because a better rowen crop will be secured and because the clover will persist in the mowing longer.

Good weather is essential for the satisfactory making of clover hay, as it is, indeed, for the satisfactory making of any hay, but it is far more important in the case of the clovers than for timothy, on account of the fact that the clovers need much more drying. The best hour in the day for cutting, as it appears to me, is late in the afternoon. Whatever the hour, it is essential to keep in mind the fact that in the curing of clover hay it should be handled but little after it begins to dry. It is generally well understood that too much handling as the crop dries results in the breaking off of the leaves and heads, which are the most valuable portion of the crop. Whatever the hour of cutting, then, the fact should be kept in mind that this crop should be tedded but little in curing. If cut late in the afternoon, the crop may be tedded once the following forenoon. If the weather is particularly fine, it will then be ready to rake and put into cocks late in the afternoon of the same day. If the clover is curing more slowly, it may be best to leave it in windrows over one night and to turn these carefully with the fork the next forenoon, and to cock on the afternoon of the second day after cutting. The use of hay caps in curing clover hay should be more general. It is desirable to leave the clover in the cock for a number of days, sometimes as long as a week. The hay is coarse, and if exposed to rain it is badly damaged unless the cocks are protected by caps. When examination shows that the clover in the cock is apparently cured, it should be slightly opened and turned up from the bottom on the forenoon of a good day. It will then be ready to put in in the afternoon. Clover hay cured in this manner should hold substantially all its leaves and heads and should cure of a bright green color. Such clover is one of the most valuable forage crops, whether for cattle, sheep or horses. Well-cured clover hay, popular opinion to the contrary, notwithstanding, is a safe and valuable food for horses, which will need much less grain when fed such hay than when timothy hay is used.

SERIES OF 1906. VOL. 19. NO. 4.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF AUGUST, 1906.

POULTRY FEEDING.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

Approved by

The State Board of Publication.

Crop Report for the Month of August, 1906.

Office of State Board of Agriculture,
Boston, Mass., Sept. 1, 1906.

Bulletin No. 4, Crop Report for the month of August, is herewith presented. Attention is called to the article at the close of the bulletin, on "Some Practical Phases of Poultry Feeding," by John H. Robinson, editor of "Farm Poultry." Mr. Robinson's previous articles in the crop reports of other years have excited a great deal of interest among farmers and poultry raisers, and more particularly among farmers who keep some poultry, but do not make it a specialty, both in this and other States; and this article will be found to be equally helpful with those which have preceded it.

Progress of the Season.

The Bureau of Statistics of the Department of Agriculture (Crop Reporter for August, 1906) reports the condition of corn on August 1 as 88.1, as compared with 87.5 a month earlier. 89 on Aug. 1, 1905, 87.3 in 1904, and a ten-year average of 84.

Preliminary returns indicate a winter wheat crop of 493,434,000 bushels, or an average of 16.7 bushels per acre, as compared with 14.3 bushels last year, as finally estimated. The average condition of spring wheat on August 1 was 86.9, as compared with 91.4 a month earlier, 89.2 on Aug. 1, 1905, 87.5 in 1904, and a ten-year average of 82.6.

The average condition of the oat crop on August 1 was 82.8, as compared with 84 a month earlier, 90.8 on Aug. 1, 1905, 86.6 in 1904, and a ten-year August average of 84.3.

The average condition of barley on August 1 was 90.3, against 92.5 a month earlier, 89.5 on Aug. 1, 1905, 89.1 in 1904, and a ten-year average of 85.3.

The average condition of rye on August 1 was 90.8, as compared with 91.3 a month earlier, 92.6 on Aug. 1, 1905, 91.8 in 1904, and a ten-year average of 88.2.

The acreage of buckwheat is less than that of last year by about 28,000 acres, or 3.7 per cent. The average condition of buckwheat on August 1 was 93.2, as compared with 92.6 in 1905, 92.8 in 1904, and a ten-year average of 92.1.

The average condition of tobacco on August 1 was 87.2, as compared with 86.7 a month earlier, 84.1 on Aug. 1, 1905, 83.9 in 1904, and a five-year average of 83.2.

The average condition of potatoes on August 1 was 89, as compared with 91.5 a month earlier, 87.2 on Aug. 1, 1905, 94.1 in 1904, and a ten-year average of 86.3.

Preliminary returns indicate a decrease of 1 per cent in the hay acreage.

In Massachusetts the average condition of corn was 96; the average condition of oats, 95; the average condition of rye, 95; the acreage of buckwheat, compared with last year, 98, and its average condition 95; the average condition of tobacco, 98; the average condition of pasture, 98; the acreage of hay, compared with last year, 101, and the average condition of timothy, 98; the product of clover, 95, and its average quality, 92; the average condition of potatoes, 92; the average condition of beans, 88; the average condition of cabbages, 95; the average condition of onions, 91; the average condition of tomatoes, 92; the average condition of apples, 70; the average condition of peaches, 70; the average condition of grapes, 88; the product of blackberries, 98; the product of raspberries, 97; the average condition of cantaloupes and muskmelons, 87; and the average condition of watermelons, 87.

Temperature and Rainfall for the Whole Country.

[From United States National Weekly Weather Bulletin.]

Week ending August 6. — In the central valleys, Lake region and Middle Atlantic States the week was warmer than usual, the excess ranging from 3° to 6° per day; and weekly mean temperatures slightly in excess of the normals were reported from New England and the northern portion

of the South Atlantic and central Gulf States. In the Rocky Mountain region, upper Missouri valley, Texas and the South Atlantic States the week averaged cooler than usual. Elsewhere nearly normal temperatures prevailed. In the central and east Gulf States, the Ohio and central Mississippi valleys, the greater part of the Lake region and northern New England, the precipitation during the week was below the average. There was more than the average rainfall along the Atlantic coast from southern New England to the Carolinas, and very heavy rains fell in interior portions of the country.

Week ending August 13. — In the central and lower Missouri valleys and over the middle and southern Rocky Mountain slope and eastern portion of the southern Plateau the week averaged cooler than usual. In all districts east of the Mississippi River except southern Florida the week averaged warmer than usual, the temperature excess generally ranging from 3° to 5° per day in the upper Ohio valley and in the Atlantic coast districts from Georgia to southern New England. In the central and east Gulf and South Atlantic States, the central Missouri valley and in northern New England the rainfall was below the average, although good showers occurred in portions of these districts. Over most of the central valleys and Middle Atlantic States the rainfall was much above the average, heavy rains having occurred in portions of the upper Mississippi valley, upper Lake region and Middle Atlantic States.

Week ending August 20. — The week was slightly cooler than usual on the North Pacific coast and in extreme southern Florida. Elsewhere the week was warmer than usual, the mean temperature departure being from 3° to 9° above the normal throughout the northern districts east of the Rocky Mountains. The Missouri valley, the lower Lake region, New England, the northern part of the Middle Atlantic States and the greater part of the Gulf States and upper Lake region received less than the average rainfall, no appreciable amount having occurred over the northern part of the Middle Atlantic States and southern New England. Heavy rains occurred in Virginia, North Carolina,

portions of South Carolina, the interior of central and east Gulf States, Ohio valley and portions of the upper Mississippi valley.

Week ending August 27. — The week was cooler than usual in the Red River of the north and upper Missouri valleys, throughout the Rocky Mountain and Plateau regions and in California. From the lower Missouri valley southward to the west Gulf coast and in the districts east of the Mississippi River, with the exception of Florida, the week was warmer than usual, being decidedly warm in the upper Mississippi and Ohio valleys and Lake region, and over the interior portions of the Middle Atlantic States and New England, where the average daily temperature excess ranged from 6° to 9°. There was less than the average precipitation in New England, the lower lake region, portions of the upper Lake region and upper Mississippi and central Missouri valleys, and over a large part of the central and west Gulf States, although limited areas in all these districts received good rains. The Middle and South Atlantic States, lower Ohio and central Mississippi valleys, lower and upper portions of the Missouri valley and the northern portion of the west Gulf States received more than the average rainfall.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending August 6. — New England. Boston: There was much cloudiness, except on Sunday and Monday. Frequent and generally moderate rains, foggy nights and sultry days prevailed. The temperature was near the normal. Warm, dry weather would be very beneficial.

Week ending August 13. — New England. Boston: The weather was generally cloudy, with scattered rains, except on Thursday and Sunday. The rainfall was below the normal, except in parts of eastern Massachusetts, where it was above. Fog continued in coast sections. The temperature was somewhat higher than in the preceding week, and was slightly above the normal.

Week ending August 20. — New England. Boston: The weather throughout the week was generally clear, no rain

falling, except very light local showers at a few points in Maine and Vermont. Rain is much needed. The temperature was moderate and seasonable during the fore part of the week, and was high the last two days, the maximum being generally above 90°. Light frost occurred in places in Maine and New Hampshire.

Week ending August 27. — New England. Boston: Scattered local showers and thunderstorms occurred, the precipitation being light to moderate, except in small areas in central Massachusetts, where it was heavy. High temperature and humidity prevailed during the fore part of the week, and generally clear weather, with moderate temperature, during the latter part. The rainfall was sufficient to moisten the surface of the ground, but more rain is needed. Parts of Maine and New Hampshire are very dry.

The Weather of August, 1906.

During the first twelve days of the month cloudy weather prevailed, and on the coast there was an unusual amount of fog. Showers and thunderstorms occurred frequently during this period in nearly all parts of the State, which generally gave a copious rainfall, sufficient for all needs, and in some places the rainfall was excessive. The high humidity during this period, with the high temperature on the 5th, 6th, 7th, 11th and 12th, was favorable to an increased intensity of thunderstorms, which in a number of instances were of marked severity, with damage to property from lightning. Following the 12th was a period of clear weather that continued until the 20th. The temperature during the early portion of this period was near the normal, but on the 18th and 19th it became extremely warm, with maxima above 90°. The weather became generally cloudy on the 20th, and continued so through the 21st, 22d and 23d, clearing during the morning of the 24th. The humidity and temperature again became high during this period, which resulted in a number of severe thunderstorms in the central and western portion of the State, which caused some damage. At some places the rainfall was heavy, the observer at Mt. Tom having on the 21st 4.16 inches between 11 A.M., and 3 P.M.;

and in other places barns were burned and stock killed by lightning. In the eastern portion of the State the moderate showers that occurred from the 21st to 23d inclusive were sufficient to well moisten the surface of the ground, which was becoming dry and dusty. The 24th, 25th and 26th were clear, cool and very pleasant, followed on the 27th by local showers and somewhat higher temperature. The showery conditions passed off during the night, followed on the 28th by fair and generally clear weather. For the month the temperature was generally normal, except from the 18th to 23d, when it was much above the normal. The rainfall was very unevenly distributed, some places having an excessive quantity, and others hardly sufficient to keep vegetation in good condition. The amount of sunshine received did not differ greatly from the average, although during the first twelve days there was a great deficiency.

In our circular to correspondents, returnable August 23, the following questions were asked : —

1. What is the condition of Indian corn?
2. Is sweet corn raised for the market in your locality, and, if so, what is its condition and yield?
3. What is the prospect for rowen as compared with a normal crop.
4. What is the prospect for late potatoes, and have you noticed blight or rot?
5. How do the acreage and condition of tobacco compare with former years?
6. What is the prospect for apples, pears, peaches, grapes and cranberries?
7. What is the condition of pasturage in your vicinity?
8. How have oats and barley compared with former years?

Returns were received from 158 correspondents, from which the following summary has been made : —

Indian Corn.

Indian corn came forward very rapidly with the hot, clear weather of the month, and at time of making returns was generally spoken of as a very fine crop, with a heavy

growth of stover, and earing and ripening nicely. Some correspondents report that it is still backward, and will need a long season to mature the crop; but these reports are the exception, and probably are due to local conditions. Ensilage corn has made a fine growth of stover, and silos should be well filled with a fine quality of ensilage, unless there is a remarkably early killing frost.

Sweet Corn.

In Berkshire, Franklin, Hampshire, Hampden and western Worcester counties very little sweet corn is grown except for home use, the only exceptions being a section in northern Franklin County, where it is grown for a local cannery, and a few towns near the cities of Springfield and Northampton. In eastern Worcester County and in the eastern counties of the State, including the Cape and the islands, sweet corn is reported as being extensively grown for the market. It is generally reported to be an excellent crop, particularly the later varieties, yielding well, and of fine quality. It is also extensively grown in all sections as a late forage crop.

Rowen.

The greater portion of the reports would indicate that rowen will be an unusually heavy crop. This will undoubtedly be the case on all fields that were cut early; but there was such a large proportion of the first crop that was not secured until well into August that the acreage cut over for rowen will necessarily be considerably decreased. It is to be feared that the correspondents underrate the effect of this on the bulk of the crop, and that their predictions as to the bulk of the total crop must be discounted until later advices.

Late Potatoes.

Late potatoes generally promised well, with a good growth of vine and setting of tubers; but have now been generally struck with blight in all sections, and rot has appeared in many localities. The usual history of these fungous diseases is that they are worse in their effects than was at first anticipated, rather than otherwise; and it is to

be feared that another failure, more or less complete, will be scored for the potato crop in Massachusetts. Not until our farmers learn that they *must* spray, if they would save the crop, will the result be otherwise, save in exceptional years.

Tobacco.

There would appear to be another slight increase in the acreage of tobacco this season. The crop is reported as being in excellent condition, many correspondents say the best for years. Harvesting was well begun at time of making returns, and should be nearly completed by the close of the month.

Pasturage.

Pastures are generally reported as being in unusually good condition for the time of year, though there were a few reports that they were becoming dry and feed getting scarce with the hot, dry weather just prior to the date of making returns.

Fruits.

The apple crop will generally be a very small one, less than half a crop in most sections, winter varieties in particular being reported as short in yield. Pears will also be a light crop, though better than apples. Peaches will be a light crop as compared with a full yield, but probably more will be secured than in any year for some time, with the exception of 1905. Grapes are said to be set unusually full and to be developing well, promising an abundant crop. Cranberries have apparently improved during the month, and now promise to be a very good crop.

Oats and Barley.

Oats are a heavy crop where raised for grain, though suffering somewhat in some sections from rust. Barley is not raised for grain, but is extensively raised as a late forage crop, and promises a fine yield for that purpose. Oats are also largely used as a soiling crop and for hay.

NOTES OF CORRESPONDENTS.

(Returned to us August 23.)

BERKSHIRE COUNTY.

Alford (Lester T. Osborne). — Indian corn is much above the average, conditions having been very favorable. Sweet corn is looking finely, but is little raised for market. Rowen will be a better crop than usual. There is some complaint of potato rot, but the crop is about average in condition. Apples will be about an average crop. Pasturage continues remarkably good. Oats and barley are about average crops, but some oats are badly lodged. On the whole, the year has been the most favorable for vegetation on record.

Tyringham (Edward H. Slater). — Indian corn is in good condition. Sweet corn is not raised for market. Rowen compares favorably with the normal in condition. Blight has appeared on several fields of late potatoes. Very little tobacco is raised in town. The apple crop is hardly up to that of previous years. The recent rains have kept the pastures in good condition. A good crop of oats has been harvested.

Washington (E. H. Eames). — Indian corn is a good crop, fully as good as last year. Sweet corn is not raised for market. The prospect for the rowen crop is as good as last year. Potatoes promise very well, except for some rot and blight. Apples will be about an average crop and pears half a crop. Pasturage is in good condition. Oats are a full crop; barley not grown.

Richmond (T. B. Salmon). — Indian corn will be about an average crop. Sweet corn is not raised for market. The prospect is good for the rowen crop. Potatoes promise well, with very little blight or rot as yet. There will be very few apples; pears good; peaches and grapes average. Pastures are in very good condition. Oats and barley are up to average crops. Early potatoes have been a good crop, and brought a good price. Fall apples are an average crop, but winter fruit will be very poor in quality and small in quantity.

Hancock (B. H. Goodrich). — Indian corn is a little late, but is making an excellent growth. Sweet corn is not grown for market. Rowen will be less than a normal crop, as the first cutting was secured late in the season. Potatoes promise well; blight has appeared, but there is no rot worth mentioning. Apples are about half a crop for the bearing year. Pasturage is in poor condition. There is about an average crop of oats; barley but little grown.

Hinsdale (Thomas F. Barker). — Indian corn is good, but late. Sweet corn is not raised for the market. Rowen promises to be a good crop. Potatoes look well, and the early varieties are good. There will be no fruit of any kind worth mentioning. Pasturage is in very good condition. Oats and barley have made a large growth. The late rains have kept all crops growing finely.

Windsor (Harry A. Ford). — Indian corn is looking finely. Sweet corn is not raised for the market. Rowen was never a better crop. Blight has appeared on potatoes, and there will be a poor crop. There is a very light crop of apples; no other fruits raised. Pastures are dry, but about as usual for the time of year. Oats and barley are normal crops.

Cheshire (L. J. Northup). — Indian corn is a normal crop, and the outlook is the best for several seasons. Sweet corn is raised to a certain extent, and is yielding well. Rowen will be a normal crop where the hay crop was secured early. Apples 25 per cent; pears 75 per cent; grapes a fair crop. Pastures have dried up during the last ten days, because of lack of rain. Oats are a first-class crop; barley not much raised.

Savoy (W. W. Burnett). — Indian corn has made a good growth, but is a little backward. Sweet corn is not much raised for market. Rowen will scarcely be up to the normal, as the first crop was cut too late. The prospect for late potatoes is not good, as they are blighting and rotting. The prospect is very poor for all fruits. Pasturage is in fine condition. Oats and barley are full average crops.

New Ashford (Elihu Ingraham). — Indian corn is in good condition. Sweet corn is not raised for market. Rowen promises a good crop. Potatoes promise a fair crop, but blight and rot are showing up quite extensively. Apples will be a light crop. Pastures are in good condition. Oats and barley are good crops.

FRANKLIN COUNTY.

Monroe (David H. Sherman). — Indian corn is but little grown, and is late. Sweet corn is raised to some extent, and is yielding well. The greater part of the hay crop was cut too late for a normal crop of rowen to follow. Potatoes will be a light crop, blight having appeared about August 1, and some fields showing half the tubers rotted. There will be very few apples; wild blackberries plenty. Pasturage is in very fair condition, but needs rain now. Oats and barley are about average crops.

Rowe (N. E. Adams). — Indian corn is about ten days late but has made a strong growth. Sweet corn is not raised for market. The rowen crop promises to be very large. The yield of late potatoes will be small, blight having appeared, with some rot. The prospect is very poor for fruit of all kinds. Pasturage is in very good condition. Oats

and barley are about normal crops. Rain is needed by the rowen crop and feed in pastures.

Hawley (C. C. Fuller). — Indian corn is in good condition. Sweet corn is not raised for market, but for home use, and is yielding well. The prospect is good for rowen, if we do not have drought. There is considerable blight and rot on potatoes. Apples are scarce except in a few cases; other fruits normal. Pastures are in fair condition. Oats and barley are about normal crops.

Colrain (A. A. Smith). — Indian corn is in good condition. Sweet corn is raised for market, and is a good crop. Late potatoes promise well, but show some blight. Rowen promises a good yield. Less tobacco is being raised than formerly, but it is in good condition. The prospect is poor for all fruits. Pasturage is in fine condition. Oats and barley are better than normal crops.

Bernardston (R. H. Cushman). — There is a large growth of fodder on Indian corn and it is eared well. Sweet corn is raised for market, and the yield will be heavy, picking beginning last week. Rowen will be above an average crop, and some fields have been secured. There is general complaint of blight and rot, but the prospect for potatoes is otherwise good. There will be a light yield of all fruits. Pastures are in excellent condition. Oats and barley are nearly all cut for hay, and have made a large growth, but weather conditions have not been very favorable for securing the crops.

Ashfield (Charles Howes). — Indian corn has made up for lost time, and is in fine condition. Sweet corn is not raised for market. There is a good prospect for rowen, and there will be a fine crop. Potatoes are looking well, with very little blight or rot. Probably there will be about half a crop of apples; but few pears or peaches. Pastures hold out very well. There is a good growth of oats and barley, but they are mostly grown as forage crops. All crops have made rapid growth during the last six weeks.

Montague (A. M. Lyman). — Indian corn is in first-class condition. Sweet corn is raised for market, and is in fine condition. The prospect is good for the rowen crop. Late potatoes will be a poor crop, having blighted and now rotting badly. The acreage of tobacco is large, and the condition nearly perfect. There is generally a short crop of fruit. Pasturage has held out well. Oats and barley are fair crops. There is considerable Japanese millet raised about here, quite a number of large fields being grown for the seed. Onions have generally blighted more or less, and there will not be more than half a crop.

Northfield (Thos. R. Callender). — Indian corn is uniformly good, with the promise of a heavy yield. Sweet corn for canning is extra good; none harvested yet. Rowen will be above the average on early cut fields. Potatoes promise poorly, with both blight and rot. The acreage of tobacco is small, but there will be one of the best crops ever grown. All fruit will give a very light crop. Pastures were never

better for the time of year. Oats are below an average crop. Cucumbers for pickles have yielded an unprecedented crop, and growers have had a hard time, with insufficient help, to keep them picked to required size.

Wendell (N. D. Plumb). — Prospects are favorable for a large yield of Indian corn. Sweet corn is not raised for market. The rowen crop promises to be the best for the past decade. Late potatoes are afflicted by blight, and are rotting badly. There will be about one-fourth of a normal crop of fruit. Pastures look as well as they usually do in the month of June. Oats are above an average crop; no barley raised.

New Salem (Daniel Ballard). — Indian corn is looking well. Sweet corn is raised for market to a small extent, and has made a good yield. Rowen is a full crop where the first crop was cut early. Potatoes have made a good growth, but blight and rot have begun to appear. There will be a medium crop of apples; pears plenty; very few peaches; grapes more plenty. Pastures hold out well. Oats and barley are good average crops.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — Indian corn is excellent, but perhaps a little late. Sweet corn is not grown for market to any extent. The first crop of hay was secured so late that the prospect for rowen is not very good. Blight has appeared on potatoes, but no rot as yet. There will be no fruit of any account. Pasturage is fine for the season of the year. Oats are grown for fodder; barley not grown. Many of our farmers are just finishing haying, owing to trying weather; a good crop has been secured, but in some cases not in the best condition.

Pelham (John L. Brewer). — Indian corn is in excellent condition. Sweet corn is but little raised for the market, but the family supply is of good quality. A fair crop of rowen is expected. A few fields of potatoes have blighted, and are rotting badly. Apples will be a fair crop; pears and grapes excellent. Pasturage was never better at this time of year. Oats have not been very satisfactory. Crops look in fine condition, with the exception of potatoes.

Amherst (Wm. P. Brooks). — Indian corn is in excellent condition. Sweet corn is not raised for market to any extent, but condition and yield are good. The rowen crop will be much above the normal. Blight is general on potatoes, but there is little rot. Tobacco has made a fine growth, and shows little damage to leaf; harvesting well begun. Apples are very uneven; pears below average; peaches good; grapes exceptionally good. Pastures are in excellent condition. Oats rusted badly, and are below average.

Hadley (H. C. Russell). — Indian corn is in excellent condition. Sweet corn is not grown for market. Rowen will be better than an

average crop. There is some blight and a little rot on potatoes, and the prospect is not flattering. There is 10 per cent increase in the acreage of tobacco, and the best crop for many years. There will be but few apples; no peaches; plenty of grapes and pears. Pasturage is in good condition. Oats and barley are normal crops.

South Hadley (W. F. Person). — Corn looks well, but not equal to last year. Sweet corn is raised for home use, and looks well. The prospect is good for rowen. Late potatoes will be a poor yield; blight but no rot. No tobacco grown in this town. Apples light; pears a heavy crop, of good quality; no peaches. Pasturage is in very good condition. Oats are a fair crop, but not up to the average; barley good.

Hatfield (Thaddeus Graves). — Indian corn is unusually forward, and is good. Sweet corn is good, but is not raised for market. Rowen is forward, and promises finely. Late potatoes will be a poor crop, with much blight, but no rot at present. There is a slight increase in the acreage of tobacco, and a banner crop. Apples are about one-third of a crop; pears and grapes about as usual. Pasturage is in good condition. There is little if any oats or barley. Onions will be about one-third of a normal crop, owing to blight.

Southampton (C. B. Lyman). — Indian corn is of very good growth, but rather late, and would suffer from early frosts. Sweet corn is but little grown for market. The rowen crop started well. Late potatoes are looking well, with no rot. The acreage of tobacco is fully up to former years, and the crop never looked better. Apples will be a small crop; pears abundant; peaches full crop; grape vines loaded. Pasturage is good. As a whole, crops have made a large growth.

Huntington (Henry W. Stickney). — Indian corn has made a great growth. Sweet corn is looking finely. There is a big growth of rowen, seldom if ever equalled. Pears and grapes will be fine crops. Pasturage is about as usual, but a little rain would be very acceptable.

Cummington (S. W. Clark). — Indian corn shows a heavy growth, but is a little late. Sweet corn is raised largely for silo and for forage, and is looking well. The prospect for the rowen crop is very good. Late potatoes are beginning to rot, and some are digging them. Apples may be half a crop; other fruits normal. Pasturage has been very good all the season. Oats gave a very heavy growth of straw, and have been cut for hay; barley normal. Where the first crop was cut, early rowen is looking very fine; but owing to bad weather, haying was much delayed, and the two crops were cut together on many fields.

Middlefield (J. T. Bryan). — Indian corn is in excellent condition. Sweet corn is not raised for market, but yields well in the garden. There will be more than an average crop of rowen. Late potatoes are suffering from blight. Fruit is about half an average crop. Pastures are in excellent condition. Oats and barley have made good crops, but were nearly all cut for hay.

HAMPDEN COUNTY.

Chester (C. Z. Inzell). — Indian corn is looking well. Rowen will be about a normal crop. There is some blight on late potatoes. Apples will be a light crop. Pasturage is good, but is getting a little dry.

Tolland (Eugene M. Moore). — Indian corn has a large growth of stalk, but is a little slow in earing out. There will be more than an average crop of rowen. All potatoes are struck with blight, and some are rotting. Apples will be a light crop; pears about average; wild berries more than average. Feed in pastures is getting short. Oats have made a large growth, more than average.

Russell (E. D. Parks). — Indian corn is very good, up to the average or better. Sweet corn is not raised for market. Rowen will be about an average crop. Late potatoes are not doing well, and there is blight on many fields and some rot. Tobacco is but little raised, but the crop is an excellent one. There is not an abundant crop of apples or peaches; pears are above an average. Pastures were very good up to last week, but are getting very dry now. Oats and barley are fully up to average crops. Ensilage corn is looking finely.

Agawam (J. G. Burt). — The condition of Indian corn is good. Sweet corn is raised for market, and is in good condition. The prospect for rowen is good. The prospect is good for late potatoes, and there is little rot. There is a good acreage of tobacco, and a fine crop. There are not many apples, but pears, peaches and grapes are good crops. Pasturage is in good condition. Oats and barley are about average crops.

West Springfield (N. T. Smith). — Indian corn is above the average, coming forward rapidly on account of hot weather. Sweet corn is quite extensively raised for market, and is in good condition. The rowen crop will be heavy where the first crop was taken off early, but much grass was cut late, on account of bad weather. Late potatoes are not quite up to the average, judging from those dug; some blight, but no rot. The acreage of tobacco is slightly increased, and it is in fine condition. Apples are not over 25 per cent of a crop; pears full; peaches and grapes half crops. Pasturage is unusually good for the time of year. Oats and barley are not raised, except for fodder; oats suffered from rust.

Chicopee (E. L. Shaw). — Indian corn is maturing very fast, and is an excellent crop. There is a small quantity of sweet corn raised, and it is a good crop. Rowen is a little above the average. The prospect for late potatoes is fairly good, but some fields show blight. Apples are very poor; pears good; peaches little raised, but crop fair; grapes plenty. Few pastures here, but they are in good condition. Oats are about an average crop.

East Longmeadow (John L. Davis). — Indian corn is making a good

growth of fodder, and is earing well except on very moist land. Sweet corn promises an excellent yield. The prospect for rowen is above the normal, except that rains have delayed the getting of the first crop. Blight is general on late potatoes, with some rot, and there will not be over two-thirds of a normal crop. Apples are half a crop; pears half a crop; peaches average. Pasturage is in excellent condition. Oats are two-thirds of an average crop. Quite a large number of strawberries have been set out this season.

Hampden (John N. Isham). — The prospect is favorable for a good crop of Indian corn. Rowen is better than usual, although many fields were cut too late for rowen. Potatoes have grown finely the past month, and there is very little blight. Apples will be little more than half a crop; peaches and grapes good. Pasturage is better than usual for this season of the year. Oats rusted somewhat, which shortened the crop. Potatoes are remarkably free from potato beetles.

Wilbraham (H. M. Bliss). — Indian corn is a good crop. Rowen will be 70 per cent of a normal crop, owing to late cutting of the first crop. Late potatoes promise well, but show a little blight. Apples 80 per cent; pears 95 per cent; peaches 90 per cent; grapes 85 per cent; cranberries 75 per cent. Pastures are in good condition. Oats and barley have been good crops. It is estimated that there are 80 acres of peach trees in bearing condition in this town.

Holland (Francis Wight). — Indian corn is looking well. There is not much sweet corn raised here. Rowen is looking well, but needs rain now to carry it through. The prospect is good for late potatoes. There is a fair crop of apples; pears and peaches light; grapes and cranberries fair. Pasturage is in good condition, although it is getting dry. Oats and barley are about the same as in other years.

WORCESTER COUNTY.

Warren (W. E. Patrick). — Indian corn has made a good growth lately, and promises a normal crop. Sweet corn is raised to some extent, and is making a fair yield. Rowen promises more than a normal crop. Late potatoes show some blight, but are looking well. Apples have fallen badly, but there still promises to be a large crop; pears fair; peaches and grapes good. Pastures are in fine condition. Oats and barley have made good yields.

West Brookfield (Myron A. Richardson). — Indian corn is backward, but will be an extra crop if frost keeps off. Sweet corn is not raised for market. The rowen crop thus far looks finely, and will be larger than of late. Potatoes are looking well; no signs of blight as yet. There will be a small yield of fruit of most kinds, on account of spring frosts. Pastures are looking well. Oats and barley have all been cut for hay, but both made a large growth.

New Braintree (Chas. D. Sage). — Indian corn is in very good con-

dition. Sweet corn is not raised for market. There will be a good crop of rowen where the first crop was cut early. Late potatoes promise well, with no rot as yet. Apples will perhaps be half a crop; pears good; no peaches; grapes fair. Pasturage was never better at this time of year. Oats and barley are full average crops, but were mostly cut for hay.

Oakham (Jesse Allen). — Indian corn is in fine condition. Sweet corn is not raised for market. There is an average crop of rowen. Many fields have blighted, and there is some complaint of rot. There is a very light crop of fruit of all kinds. Pasturage is getting very dry. Oats and barley compare well with former years.

Dana (Lyman Randall). — Indian corn is in fine condition, and promises a heavy yield, both in grain and stover. Sweet corn raised for the local market is a heavy yield, and of fine quality. Where the first crop was cut early, the rowen crop is very heavy. Late potatoes do not promise a very heavy yield, owing to blight. Apples will not be over one-fourth of an average crop, and are of poor quality; some pears and peaches; grapes and cranberries good. Pastures are in excellent condition, owing to frequent showers. Oats and barley raised mostly for fodder, and the yield is about average.

Royalston (C. A. Stimson). — Indian corn is in excellent condition. Sweet corn is little raised for market, but is in fine condition. There will be a full crop of rowen. Blight and rot have set in on potatoes, and rot looks likely to be very prevalent. No peaches; fair crops of all other fruits. Pasturage is in fair condition. Oats and barley are full crops.

Templeton (Lucien Gove). — Indian corn has made a fine growth, but is a few days late, and needs more sunshine. Sweet corn is raised for market, and, though late, is promising. Rowen will be very good on fields cut previous to July 15; late-cut fields not promising. Late potatoes do not promise well, both blight and rot showing extensively. Apples a very light crop; pears medium; peaches not raised; grapes good; cranberries not raised. Pasturage is very good for the time of year. Oats are rather below normal; barley quite good. Beans are rusting badly.

Gardner (A. F. Johnson). — There will be a full crop of Indian corn, of good quality. There will be a heavy crop of rowen. Late potatoes are looking well, with no blight. There will be a full crop of apples and pears. Pastures are in need of rain.

Ashburnham (E. D. Gibson). — Indian corn is still backward, and, though growing fast, needs rain. Sweet corn is not raised for market. There will not be an average crop of rowen. There will not be a heavy yield of late potatoes, blight having appeared. Apples light; pears good; no peaches; grapes few; cranberries few. Pastures have seldom been as good, but now need rain. Oats and barley are below average crops.

Westminster (Alden J. Foskett). — Indian corn is rather backward, but growing well now. Sweet corn is in good condition, and will give a fair yield. The prospect for the rowen crop is very good. There is some rot on late potatoes. There will be a good yield of fall apples, but the prospect for winter varieties is poor; some pears. Pasturage is in first-class condition. Oats and barley are in very good condition.

Harvard (John S. Preston). — Indian corn is a little backward, but is growing fast. Sweet corn is raised quite freely for market, and is yielding well, with prices good. There is a prospect for a very large crop of rowen. Late potatoes promise well, but are running to vine more than usual. Fall apples are a good crop, winter apples light; pears good, peaches light. Pasturage is much better than usual at this time. Oats and barley are very good, but those early sown are a little lighter than usual.

Princeton (A. O. Tyler). — Indian corn is in excellent condition. Sweet corn is raised to some extent, and is of good quality. There will be a fine crop of rowen. Late potatoes show a good yield, but are rotting somewhat. There will be light crops of all fruits. Oats and barley are about normal crops. Fruits on high lands, where they were not affected by late frosts, are yielding well.

Sterling (H. S. Sawyer). — There is the prospect of a good crop of Indian corn. Sweet corn is raised to some extent, and is yielding fairly well. The prospect is good for more than a normal crop of rowen. Late potatoes are looking well, and blight has not been noticed to any great extent. The prospect is good for apples, pears and grapes. On account of copious rains, pastures are looking well. There is very little barley; oats have turned out well; acreage normal.

Northborough (John K. Mills). — Indian corn is growing rapidly, and gives promise of a good crop. Sweet corn is grown quite extensively, and the crop is a good one. There is the prospect of a good crop of rowen where the first crop was cut in good season. Potatoes are yielding well, though there is some blight and rot. There will be an average crop of apples, pears, peaches and grapes. Owing to the heavy rains, pastures are in excellent condition. The yield of oats and barley has been fully up to the average.

Worcester (Silas A. Burgess). — Indian corn is in good condition. Sweet corn is raised for market, and is in good condition and yielding well. There will be more than an average crop of rowen. Late potatoes are in fair condition, but blight has appeared. Apples 70 per cent; pears 60 per cent; peaches and grapes 100 per cent. Pasturage is in good condition. Oats and barley have made average yields.

Leicester (H. H. Kingsbury). — Corn is growing rapidly, and is of good color, although somewhat backward. Sweet corn is raised only for home use. Weather conditions have favored the growth of a large crop of rowen. Potatoes have turned black, and are dead, probably

from blight; no rot as yet. The apple crop will be very large for the even year; other fruits about average. Pasturage is in fair condition for the time of year. There have been large amounts of fodder hayed from oats and barley.

Oxford (D. M. Howe). — Indian corn started late, but there was plenty of rain and hot weather, so that it now looks finely. Sweet corn is raised for market, and is a fine crop. There will be a normal crop of rowen. Late potatoes promise well, with no rot. Apples fair; pears good; peaches few. Pasturage is in good condition. Oats in some sections have been heavy. The hay crop has been the heaviest for years, but many farmers are not through haying yet.

MIDDLESEX COUNTY.

Sherborn (N. B. Douglas). — There is a good growth of stalk on Indian corn, but it is not earing well. Sweet corn is in the same condition as field corn. There will be more than an average crop of rowen. There is considerable blight on potatoes, but no rot as yet. Apples are half a crop; pears good; some peaches; full crop of grapes. Pasturage is getting short.

Hopkinton (W. V. Thompson). — Indian corn is in good condition, but is a little late. Sweet corn is raised mostly for home use, and is in very good condition. There will be more than an average crop of rowen. Late potatoes look well, as a rule, but some blight has appeared. There is a light crop of peaches and pears; a fair crop of good apples; a plentiful crop of grapes. There is very little pasturage, but that is in good condition. Oats and barley are not much raised.

Marlborough (E. D. Howe). — Indian corn is about 90 per cent of a full crop. Sweet corn is raised to some extent, and is in good condition and yielding well. Where the first crop was cut early, rowen is heavy; but there is quite a little first crop still uncut. Blight is quite prevalent, and the prospect for potatoes is not good; perhaps there will be half a crop. Apples 60 per cent of a full crop; pears 75 per cent; peaches 10 per cent; grapes 100 per cent. Pasturage is in good condition for the time of year. Oats and barley are 85 per cent of a full crop.

Maynard (L. H. Maynard). — Indian corn is in excellent condition, and will yield well. Sweet corn is grown to some extent for market, and is in good condition, but a little late. The rowen crop will be good on early cut fields, but haying was much delayed by rainy weather. Potatoes look well, and promise a large crop; no blight or rot as yet. All fruits will be in full supply. Pastures look well, but a week of clear, hot weather is drying them up. Oats and barley are about normal crops. Japanese millet and Hungarian grass have been good crops this season.

Westford (J. W. Fletcher). — Indian corn is in good condition.

There will be a good rowen crop. Late potatoes promise well, with no blight as yet. Apples and pears will be plenty. Pastures are in very good condition.

Townsend (G. A. Wilder). — Indian corn will be an average crop. Sweet corn is raised for market to a certain extent, and is in good condition and yielding well. There will be more than a normal crop of rowen. The prospect for late potatoes is poor, as they are rotting badly. Apples good; pears average; peaches below; grapes normal; cranberries normal. Pastures are in good condition. Oats and barley are about the same as usual.

Dunstable (A. J. Gilson). — Indian corn is somewhat late, but is looking well otherwise. The yield and condition of sweet corn is good. There is the prospect of more than a normal crop of rowen. Late potatoes promise a good crop, but blight and rot have appeared on early varieties. Apples, pears, peaches and cranberries are light crops, and cranberries medium. Pasturage is very good for the time of year. Oats are a light crop; no barley raised for grain. Beans and cucumbers have blighted badly, and squash and melon vines are growing much faster than the fruit.

Chelmsford (P. P. Perham). — Indian corn is more than an average crop. Sweet corn is raised for market, and is a very large crop. Rowen is away above a normal crop. Our people are about discouraged trying to raise potatoes, and the few that were planted have blighted. Not over half as many winter apples as last year; pears plenty; peaches few; grapes largely growth of vines, but little fruit. Pastures never looked better at this time of year. Oats and barley were large crops, and were mostly fed green.

Tewksbury (G. E. Crosby). — Indian corn is not grown in this vicinity. Sweet corn has been very good, on the whole. The prospect for the rowen crop is good. Some fields of potatoes show blight and a tendency to rot. Apples about two-thirds crop; pears and peaches about half crops. Pasturage is in better condition than usual at this season. Oats and barley are very light as forage crops. Celery has blighted, especially early celery; and some fields have been plowed under.

Concord (Wm. H. Hunt). — Indian corn is in fine condition. Sweet corn is raised for the market, and is doing very well. The prospect for rowen is good on early cut pieces. There is no blight or rot so far on potatoes, and they look well. Apples are a fair crop, and pears and grapes full crops. Pasturage is in very good condition. In this vicinity most crops are looking finely. So far there is very little rust on asparagus.

Lincoln (C. S. Wheeler). — Indian corn is about average for the small amount raised. Sweet corn is extensively raised for market, and is fine in condition and yield and ripening early. There will be more than a normal crop of rowen. If rot does not ruin the crop, late po-

tatoes will yield well, but some rot has appeared. The prospect is good for apples, peaches and grapes. Feed is very good in pastures where the brush have been kept down. Oats and barley have been good crops.

Wakefield (Charles Talbot). — Indian corn is the finest crop for years. The yield of sweet corn is great with a great demand. The yield of rowen will be 20 per cent better than last year. The prospect for late potatoes is good, with no blight or rot to speak of. Pears plenty; few apples; no peaches; grapes and cranberries in abundance. Pasturage is in good condition. Oats and barley are about normal crops. All garden crops are of the finest with extra good growth.

Winchester (S. S. Symmes). — Indian corn is not raised. Sweet corn is raised for market, and is a fine crop. Rowen promises to be a good crop, and is being cut already. A little rot has just started on late potatoes. There are few apples, but pears and peaches are good crops. Pastures are in fine condition. The quality of the tomato crop is not as good as usual, some vines having blighted.

Arlington (W. W. Rawson). — The weather is very hot and dry, and celery has begun to blight. All other market-garden crops are looking well, and the crops have all been better than on average years.

Newton (G. L. Marcy). — Indian corn is in good condition. Sweet corn is in good condition, with an average yield. Rowen will be better than an average crop. Late potatoes are not much grown. The prospect is good for all kinds of fruits. Pasturage is in good condition. Oats and barley have grown well, but wet weather at maturity greatly injured crops.

ESSEX COUNTY.

Amesbury (F. W. Sargent). — The acreage of Indian corn is small, but it is making rapid growth, though it will need a long season to mature. Sweet corn is raised for market, and is yielding well. Rowen never promised better where grass was cut early, but much of the first crop was cut late. The yield of potatoes is apparently good, with no blight as yet. Apples are a light crop; pears plenty; grapes few. Pastures are in excellent condition. Late oats are rusting; oats and barley otherwise good, but little raised for grain. Market gardeners complain of nearly complete loss of cucumbers by blight, and tomatoes are ripening badly.

Haverhill (Eben Webster). — Indian corn is in good condition. Sweet corn is raised for market, and most of the early varieties are past, with later ones looking well. Rowen will be about a normal crop. There is some blight and rot on late potatoes, but not on early ones. Early apples plenty, late varieties about a two-thirds crop. Pasturage is in good condition. Oats and barley are about normal crops. The ground is very dry now, there having been no rain for about two weeks.

Andover (Milo H. Gould). — Indian corn is in good condition. Sweet corn is raised for market, and is in unusually good condition, but prices are low. There will be more than a normal crop of rowen. The prospect is good for late potatoes, but rot is troubling somewhat. Winter apples are a good crop; pears abundant; grapes eaten by rose bugs; cranberries good. Pasturage is in very good condition. Oats and barley are about normal crops. Cucumbers raised for pickles have been hurt by blight.

Rowley (D. H. O'Brien). — Indian corn will be very late, and liable to injury from frost. Sweet corn is little raised for market. Rowen promises better than an average crop. The present outlook is for a light crop of potatoes, as they have blighted badly. Apples are a fair crop; pears medium; peaches and grapes good; cranberries poor. Pastures are in extra good condition. Oats and barley compared favorably with the normal.

Danvers (C. H. Preston). — Indian corn is in good condition. Sweet corn is in good condition, and yielding well. Rowen will be an average crop. There is some blight and rot on potatoes. Apples will be less than half a crop; pears fair; peaches fair; grapes good. Pasturage is in good condition.

Manchester (John Baker). — Indian corn is in fine condition. Sweet corn is in first-class condition. Rowen promises a good yield. Early potatoes blighted, but late ones promise well. There will be medium crops of fruit. Pasturage is in good condition. Oats and barley are about normal crops. The season has been a good one for all forage crops, but just now is getting a little dry.

NORFOLK COUNTY.

Randolph (Rufus A. Thayer). — Indian corn promises a good average crop. Sweet corn is a little late, but is growing finely. Rowen is not an average crop. Late potatoes are looking well, but some rot has appeared. Apples will be half a crop; pears half a crop; grapes a full crop. Pasturage is very fine for the season. Oats and barley are good crops, but are all used for fodder. On account of rainy weather, the hay crop was not harvested as early as usual, and on late cut fields there will be very little rowen.

Canton (E. V. Kinsley). — Indian corn is A No. 1. Sweet corn is raised to some extent for market, and is good in condition and yield. Rowen will be very heavy on early cut mowings. Late potatoes promise well; have heard of some blight, but have seen none. Apples are a short crop; other fruits good. Pasturage is in very good condition, but will soon be short if the present weather continues. Oats are a very poor crop; barley raised for forage, and yielding well. Milk is getting short, and fresh cows are in demand.

Norwood (F. A. Fales). — Indian corn is two weeks late, but is looking well. Sweet corn is grown for market, and is in good condi-

tion, though rather late. Rowen will be an extra good crop. Most potato fields are looking well, but some have blighted. There will be not more than half crops of apples and pears; very few peaches, and a small crop of cranberries. Pasturage is in very good condition. There is a fair crop of both oats and barley, but a small acreage.

Walpole (Edward L. Shepard). — Indian corn is above the normal. Sweet corn is not very extensively grown, but is in good condition. Rowen will be above the normal on early cut fields. The prospect is good for late potatoes, but there is some blight and rot. There will be about half a crop of fruit. Pasturage is above the normal in condition. Oats and barley are fair average crops.

Millis (E. F. Richardson). — Indian corn is in fine condition. Sweet corn is slightly raised for market, and is in excellent condition. Rowen promises to be an excellent crop. Blight has put in an appearance on potatoes. There will be a large crop of all kinds of fruit. Pastures are in fine condition. Oats and barley have been about three-fourths crops.

Franklin (C. M. Allen). — Indian corn is a little late, but looks finely. Sweet corn is in good condition, and yielding finely. The prospect for the rowen crop is the best for years. Late potatoes are looking well, though there is some blight. There will be about an average crop of fruit. Pasturage is in good condition. Oats and barley are good crops. This has been an exceptionally good season for growing plants, and nearly all crops are very fine.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — Indian corn is a little late, but is looking finely. Sweet corn is not raised in large quantities; the early crop was poor, but later varieties are in fine condition. The rowen crop will be above average where hay was cut early, and fairly good on later cut fields. The prospect for potatoes is good, with no rot. Apples poor; pears fair; peaches and grapes poor. Pasturage is in excellent condition. Oats and barley are above the average in yield.

Attleborough (Isaac Alger). — Indian corn is in good condition. Sweet corn is a full average crop in yield and quality. Rowen will be more than an average crop. There are no apples; pears a fair crop; cranberries fair. Pastures are in very good condition. Oats and barley are about average crops. The season thus far has been very good.

Seekonk (John W. Peck). — Indian corn is little raised, but is looking finely. There is a large acreage of sweet corn, and it looks finely. Rowen promises to be an excellent crop. Late potatoes are looking well, though there is blight on some low fields. The fruit crop will not be nearly up to that of last year. Pastures are in very good condition, owing to abundance of rain. Oats and barley are good

crops. Celery is looking well, though if not sprayed I predict that it will blight. All market-garden crops are looking well.

Dartmouth (L. T. Davis). — Indian corn is a fine crop, and earing heavily. Sweet corn is in good condition, and yielding well. Early cut fields will give a good crop of rowen. Late potatoes are not grown, but early varieties show some rot. Apples 10 per cent; pears 50 per cent; peaches 30 per cent; grapes 60 per cent. Pasturage still holds very good. Oats and barley are little raised, but are good crops.

Acushnet (M. S. Douglas). — Indian corn is in fine condition. Sweet corn is raised for market, and is in good condition, with more than an average yield. Rowen will be above a normal crop. Late potatoes are rotting quite badly. Apples and pears are scarce; few peaches; grapes and cranberries good. Pasturage is in good condition. Oats are not up to the average, and have rusted badly; barley looking well for late forage crop.

PLYMOUTH COUNTY.

Norwell (H. A. Turner). — Indian corn is in very fair condition. Sweet corn is not much raised in this section. Rowen will be about half a normal crop. Potatoes are blighted and rotting on many fields. The apple crop will be light; pears good, also grapes. Pasturage is in very good condition. Oats and barley are about normal crops.

Marshfield (J. H. Bourne). — Indian corn is in excellent condition, though a little late, so that frost must hold off until October. Sweet corn is raised for market, and condition and yield are fairly good. Rowen promises a fairly good crop, in spite of late cutting of first crop. Late potatoes promise well, except for blight and some rot. Apples and pears abundant; cranberries better than last year. Pastures are better than usual. Oats and barley are a little better than ordinarily, as the rains carried them out.

Pembroke (Nathaniel Morton). — Indian corn is in very fair condition. Sweet corn is not raised to any extent. Rowen is going to be a very good crop, much larger than usual. There is an abundant yield of potatoes, but some blight. Apples poor and scarce; no peaches grown; no grapes; cranberries medium. Pasturage is in very good condition. Oats and barley are about average crops.

Hanson (F. S. Thomas, M. D.). — Indian corn is in good condition. Sweet corn is raised for market to a certain extent, and is in good condition. Rowen never promised better than now. Potatoes have blighted badly, but do not show rot. There will be few winter apples; some pears; no peaches; some grapes and cranberries. Pastures are in fine condition. Oats and barley are little raised. We have had a very wet season, but it has now been hot and dry for a week.

Bridgewater (Rowland Cass). — Indian corn is a little late, but is growing fast. Sweet corn for market is not much grown in this lo-

cality. Rowen will be a good crop on land on which the hay crop was secured early. Late potatoes will be below the average, as they blighted early. The prospect for pears is good; other fruits poor. Pastures are in good condition. The oat crop is not as heavy as in former years.

Plympton (Winthrop Fillebrown). — Indian corn is looking the best it has for years. Sweet corn is not raised very largely for market, but that raised for local use is good. Where the first crop of hay was secured early there will be a large crop of rowen. Late potatoes are looking fairly well, but blight and rot are showing to some extent. Grapes and cranberries give big promise. Pasturage is holding out extremely well. Oats and barley are raised only for forage crops, and are giving large yields. The weather for haying was very unfavorable, and hundreds of tons of hay were spoiled, while very little has been put in in first-class condition.

Kingston (George L. Churchill). — Indian corn is in very good condition. There is not much sweet corn raised, but what there is is in good condition. Rowen will be up to the normal in yield. There will be a fair crop of potatoes; some blight, but no rot as yet. There is a very good crop of apples, pears and peaches; cranberries fair. Pastures are in very good condition. There have been average yields of oats and barley. The weather conditions are now good for growing crops, and there is no reason why there will not be very good crops of everything of the vegetable kind.

Lakeville (Nathaniel G. Staples). — Indian corn is in very good condition. Sweet corn is raised for market, and is in very good condition. Rowen is about double the normal crop in yield. There will be a good crop of potatoes, though there is some blight and rot. Fruit promises a fair crop. Pasturage is in good condition. Oats and barley are about normal crops.

Wareham (A. B. Savary). — Indian corn is in good condition. Sweet corn is raised to some extent, and is in good condition and yielding well. There will be more than a normal crop of rowen on mowings that were cut in good season. There is some blight on potatoes, but little rot as yet. There will be few apples, no peaches and a fair crop of pears; cranberries average. Pasturage is still good, but has dried up somewhat in the past week. Oats and barley are not raised.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Indian corn is doing finely, but is little grown. Sweet corn is grown for market, and is a good yield, but poor in quality. Rowen and weeds are more than normal crops. Potatoes are a fair crop, with some rot now showing. Winter apples good; pears and peaches poor; grapes good; cranberries good. I have never seen so much feed in pastures as now. Japanese plums rotted badly; peaches are doing the same; and pears crack and scab badly.

Mashpee (W. F. Hammond). — Indian corn is above the average. Sweet corn is raised for market, and is above the average in condition and yield. Rowen will be more than an average crop. There is blight on a few fields of potatoes, but very little rot, and the outlook for the crop is good. There will be half a crop of apples and pears; one-fourth of a crop of peaches; three-fourths of a crop of cranberries. Pasturage is above the average. Oats were above the average, but were spoiled during the long wet spell both for grain and forage.

Barnstable (John Bursley). — Indian corn is in first-class condition. Sweet corn is raised for market, and is in good condition and yielding well. There will be a large crop of rowen. Some blight has appeared on potatoes, but there is little rot as yet. Apples will be a light crop; pears, peaches and grapes good; cranberries more than average. Pasturage is drying up within the past few days. Oats and barley are little grown.

Dennis (Joshua Crowell). — Indian corn is in fine condition. Sweet corn is raised for market to some extent, and gives a fair yield, the late varieties doing the best. Rowen will be rather under a normal yield, owing to late cutting of first crop. The prospect for potatoes is fair, with no rot or blight. Apples medium; pears good; cranberries an average crop. Pasturage has been excellent, but is in need of rain.

Brewster (Thomas D. Sears). — Indian corn is looking well. Sweet corn is raised for the local market only, and the condition and yield is good. The crop of rowen will be above the normal. The prospect for late potatoes is not good, on account of insects, blight and rot. There will be fair crops of apples, pears, peaches, grapes and cranberries. Pastures are in good condition. Oats and barley are little raised.

Eastham (J. A. Clark). — Indian corn is in good condition. Sweet corn is not raised for market. Rowen is now in need of rain. Mostly early varieties of potatoes are raised, and the crop will be good. Apples good; pears and cranberries good. Pastures are in need of rain. Crops are now all in need of rain, but aside from that everything looks prosperous.

Wellfleet (E. S. Jacobs). — What Indian corn is raised is in very good condition. Sweet corn is raised for market, and is suffering considerably from the corn worm. Rowen compares well with a normal crop. The prospect for late potatoes is good, and neither blight nor rot have appeared. The prospect is very good for apples, pears, grapes and cranberries, but there will not be many peaches. Pasturage is in very good condition. Oats and barley are very good crops, but not much raised.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Indian corn is in very good condition. Some sweet corn is raised here for market, and it is of very fine quality and yielding well. Where grass was early cut the prospect is good for rowen, but a large portion of the first crop stood too long. Potatoes promise an average crop, but there is some complaint of blight and rot. The prospect is fair for all kinds of fruit. Pastures are in very good condition. Oats and barley are below average in yield.

NANTUCKET COUNTY.

Nantucket (H. G. Worth). — Indian corn is in good condition. Sweet corn is grown for market, and is in good condition. Rowen is a better crop than usual. Potatoes promise a good crop, with but little trouble from blight and rot. The prospect for cranberries is good. Pasturage was never in better condition. Oats rusted somewhat.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

SOME PRACTICAL PHASES OF POULTRY FEEDING.

By JOHN H. ROBINSON, *Editor of "Farm Poultry."*

It is an almost universal human habit to regard every result as brought about by a special cause, and in a single way. Most of us grow out of this superficial view in regard to things to which we have to give some thought; but it seems to require a decided effort to keep out of it in dealing with new matters or things which we do mechanically, as we were taught to do them, or have always seen them done. When we engage in something new, or seek to equal the accomplishments of those who have surpassed us in any way, we are apt to look for a key to success, or the secret of success, — for some one thing which is at the same time essential to and a guarantee of success. And when we have found out one thing that seems to be effective for the result we seek to accomplish, we are apt to be satisfied and to look no farther for causes, unless experience (as it often does) soon indicates that there must be other points to consider.

In poultry culture such matters as the merits of breeds, of methods of feeding, of systems of housing, etc., are commonly discussed as if each were of utmost importance. To himself or to others a poultryman propounds such general questions as "Is breed of more importance than feed?" "What method of feeding will give best results in egg production?" "How many square feet floor space must be allowed per hen to keep hens healthy?" "How many hens to a male to insure fertile eggs and vigorous chicks?" and so on through an almost inexhaustible list. Authorities and experts devote much time and space, and sometimes a little temper, to arguments intended to prove favorite breeds, methods or features of prime importance and indispensable; while those who are looking for the truth are at the same time confused by all this disagreement, and more confirmed in the idea that success depends on the discovery of some secret, or the adoption of some special method. Men with commercial or am-

bitious ends to serve take advantage of the general unsettled state of opinion to exploit, and sell at a premium, their special brands of goods, or to get reputation and credit for their pet ideas. I mention this not to find fault with them. Such things may be done, legitimately and honestly; but in order that we may properly discount statements from such sources, we must know what the conditions are, and allow for personal bias and interest.

In no feature of poultry culture is there so great confusion of ideas at present as in the problems of feeding. Poultry keepers were just beginning to get well out of the mists which had been spread over the whole subject by the advocates of scientifically balanced rations, when their ideas were unsettled anew by the exploitation of "dry feeding," and the projection of a new set of ideas into every discussion of the question of feeding. I sometimes think that perhaps the unsettled state of general knowledge and practice in the matter of feeding is as much to blame as anything else for the poor results in laying and hatching which have been so general in the last four years; but that is a point difficult to prove, and getting its strongest confirmation by analogy from the fact that when the individual poultryman is in such uncertainty on any point, his average results in matters on which it has any considerable influence are likely to be unsatisfactory.

A poultry keeper who is interested in getting better results from his poultry, who is interested in what others are doing, who is always looking for improvement, could not fail to be interested in all these various ideas about, and theories of, feeding, even if he could avoid learning of them, which is practically impossible for such a man. And, learning of these ideas and theories, few can escape being influenced by them. They may not appeal strongly to one with whom poultry affairs are progressing satisfactorily; but as soon as there is occasion for dissatisfaction, as soon as things begin to go wrong, and he can assign no satisfactory reason for it, the poultryman finds himself beginning to ask what there is in this or the other idea or theory for which some claim so much.

In every case, even in those in which there are absurd developments of the foundation ideas or facts, there is a basis of truth and reasonableness upon which to build. The difficulty is not with ideas that are all wrong and theories that are all false, but with those that offer good ideas and substantial facts so mixed with error or so distorted in development and presentation that in the forms in which they are finally set before the public they are of doubtful value, or perhaps positively detrimental.

Thus in regard to the theory of balanced rations; it is an unquestionable fact that fowls need a variety of food; that they cannot, except for comparatively short periods, be kept productive and thrifty on a diet lacking in variety; but there is a great gulf between that

fact and the extreme developments of the "balanced ration" fad. Thus, also, it is an unquestionable fact that mashes, as many poultry keepers make and feed them, are injurious to fowls; but there are differences in mashes, differences in fowls and differences in people. Thus, again, it is certain that many people have injured their fowls by feeding too much corn, or feeding it too carelessly; but again it is true that many others feed corn to advantage. The fault in most exploitations of foods and methods is in claiming too much for them; and in most condemnations of foods and methods, condemning their use when it is the abuse of them that should be avoided.

The more the question of the feeding of poultry is studied, and the more carefully one investigates the results of different methods and follows equal results back along very dissimilar lines of feeding, the more will he be impressed with two facts: —

First, that equally good results are obtained by many different methods.

Second, that the same method does not invariably give the same results.

The logical conclusions from these facts are, that there are many equally good methods of feeding, and that there are other factors to be considered besides quantity, quality and composition of the food.

These conclusions need cause no confusion of mind, and probably would not, if it were not for that prevalent habit to which allusion has been made, — of seeking always to establish a peculiar relation between every result and some single agency or cause. That habit makes people avoid the logical conclusions altogether, seek to find some other solution of their difficulty; and in the mental confusion which follows they imagine that the matter of feeding poultry is complicated and difficult, when the truth is that it is simple and easy if the poultry keeper will only let it be so, and if he will also maintain as near an approach to natural conditions as is necessary for the proper exercise of natural functions.

It is a matter of common observation among poultrymen that chicks hatched and reared by the natural method will usually thrive on almost any kind of feeding, while those hatched and reared artificially will often fail to thrive on the same ration that naturally hatched and reared chicks on the same premises are given with wholly satisfactory results. Why is it? It is because in the case of the artificially hatched and reared chick the diet so often has to be adapted to some unnatural and abnormal condition. This is usually a condition resulting from improper temperature or lack of ventilation, either in the incubator or in the brooder.

To illustrate: we know that it is possible for an incubator to make a good hatch, and yet the chickens — through some undiscovered wrong condition during incubation — be incapable of living. The most marked instance of this kind of which I know was called to my

attention some years ago by an exceptionally expert, careful and intelligent poultryman. From two large machines set at the same time he had taken remarkably good hatches, — about three hundred from each machine. The eggs were the same, one lot of eggs having been divided between the two machines. The conditions after the chicks were put in the brooder house were the same. They were all fed alike. When I saw them, between two and three months after the hatch, hardly a chick had been lost from one lot, while of the other hardly a chick remained. That the difference was due to something which happened during incubation was plain, but what that was it was impossible to say.

It has also often happened that when a lot of chicks from the same incubator are placed in different brooders those in one brooder will thrive, while those in another will not, — all conditions but brooding conditions being the same. The facts plainly indicate something wrong in one brooder. What is wrong it may not be easy to discover.

The bearing of such facts on the question of feeding is this. Without being so bad as to cause heavy losses of chicks, brooder or incubator conditions may be such that the chicks are not in perfect condition. Thus, as a result of wrong temperature in either machine there may be a slight catarrhal condition of the digestive organs. To chicks in this condition foods which cause no discomfort at all to perfectly healthy chicks may be at first slightly, and at last highly, irritating, causing serious, if not fatal, digestive disorders. There may be the same difference between chicks hatched and reared by natural methods; but opportunities for errors in hatching and brooding are much less frequent, for hens cannot vary in temperature as incubators and brooders may, and do, — especially in the hands of inexperienced operators.

Now, when we find that an article of food or a system of feeding which under natural conditions gives generally satisfactory results, sometimes — either under natural or artificial conditions — does not give satisfactory results, we should know that the fault is not in the food, but in something else; and that, while we may avoid ill consequences by a diet which will counteract the trouble, we do not remedy it. If we think the fault was in the feeding, we may be entirely wrong. And, if so, as long as we continue on the supposition that the feeding was wrong, we are not likely to get at the real trouble.

When a poultry keeper finds that he cannot use a ration which in the experience of others has been shown to be a good ration, he may be sure that there is something else wrong in his flock or his methods. Fowls that are healthy and rugged can use any ration that furnishes approximately what they require, and may do well on such a ration for a long time, though it may be in some respects objectionable, and neither the best nor the most economical ration. But as soon as a poultryman finds that it is only by keeping strictly to a certain ration

or system that he can command success, and that variations from it are almost immediately followed by bad results either in health, growth or egg production, he ought not to conclude that his system was so absolutely perfect or his ration so exactly balanced that any variation from it was at once seen to be wrong. He ought rather to conclude that, if his fowls were so dependent upon an exact ration or system, they were so either because so constitutionally weak that, like dyspeptics, they required a diet adapted to their weaknesses, or that there were wrong conditions which something in his ration or system constantly operated to counteract.

So the rational way to look at the matter is that, if fowls or chicks can eat and thrive on practically anything offered them in the line of staple poultry foods, without regard to careful balancing of ingredients of which they are composed, the stock is healthy and sound, and the general conditions conducive to health; but if good results are secured only by careful dieting and rigid adherence to a "balanced ration," there is weakness or error somewhere that is as likely to cause trouble when disturbed or aggravated by other means as when affected by changes in diet. Healthy poultry, like healthy people, are not "fussy" about their eating, but eat with relish all ordinary articles of food, and are not over-particular about the relative proportions of different kinds of food; for the normal digestive system easily takes care of any ordinary surplus without discomfort to the fowl, and often with decided benefit to it.

If the normal, healthy fowl or chick thrives as well on one ordinary good ration as on another (and that it does so is readily demonstrated to any one who compares results fairly), claims of general superiority for any special article of food or mixture of foods are clearly mistaken. The practical significance of this fact is that, understanding it, the poultry keeper can use special foods or systems of feeding to correct some wrong conditions, and can also use whatever available food or system of feeding is most economical or most convenient.

While, as I have said, dependence upon a certain food or system indicates something wrong outside of the feeding, if we have conditions that make us dependent on some food or system, we must continue to use it until by locating the trouble and correcting it we can become independent, and use any foods and methods we choose. I had at one time some stock that had a constitutional tendency to chronic looseness of the bowels. To check and eradicate this I did two things: I began by feeding both the breeding stock and the chicks on dry feed, and by selecting for breeding purposes each year the fowls which showed the least inclination to bowel trouble. In a very few years I had the stock entirely free from the trouble, even when fed the same ration on which the original stock had been always loose.

But it is in such matters as economy and convenience in feeding that the knowledge of the general equality of results of foods and

feeding methods for healthy stock is of greatest benefit to those who have it, and should be of most benefit to farmers and gardeners who have at different seasons of the year so many different things which may be used for poultry food, and who often find the method of feeding which suits them at one season of the year inconvenient at another.

On most farms there are available during the fall, winter and sometimes well into the spring waste vegetables of various kinds, which, with a little special preparation, are made more palatable to the fowls than if fed in their raw state. Small potatoes, beets, turnips and other vegetables, cooked and made the basis of a mash of meal and shorts, can be used to good advantage and with less waste in that way than in any other. It takes a little time to prepare them. Whether it is best to use that time in that way must depend on how profitably it would otherwise be employed, and the value of the food thus utilized.

From the time farm or farm garden products begin to be marketed there is on most farms considerable waste which may be fed to poultry or other stock. Sometimes the articles and the amounts of them available for poultry are such that it is not only unnecessary but would be detrimental to the fowls to feed them freely, and also to feed a wet mash. At this season of the year, too, there is on most farms other work more pressing and more profitable than keeping up through the summer the system of feeding followed during the winter. So, with an abundance of green food either supplied to the poultry in their yards or ranges, or fed from the field or garden, there is no need of feeding ground grains either wet or dry, and the work of feeding the poultry may be reduced to occupy but a very short time. Possibly the gross results may not be as good when the attention to feeding is reduced to the minimum. I think the general experience of poultry keepers shows that the best gross results are obtained when fowls get a great deal of attention, — not fussy or annoying attention, but judicious attention. It is so with all animals. By giving them a considerable variety of food, prepared in a variety of ways, we tempt the appetite to take the largest possible quantities of food, we avoid in no small degree the dangers of overeating of a single article, and we get in poultry better growth and greater egg production; but whether we get enough better results to pay for the extra trouble and food required is something to determine each time the question arises, in accordance with circumstances at that particular time and place.

Some poultry keepers on farms, or elsewhere, are so situated that it is desirable to reduce the work of feeding the fowls as much as possible at all seasons of the year. To such the dry feeding methods so much advocated of late years often presents the most satisfactory solution of the feeding problem. It has become customary to describe any system of feeding which omits the wet mash as "dry feeding." The advocates of dry feeding generally have made sweeping condem-

nation of wet mashes, and have charged against their use all the ills discoverable in any flock to which a wet mash happens to have been fed. As would be expected, they have also gone to the extreme in claiming all sorts of beneficial results from dry feeding. I think that any fair general consideration of the facts will show the same diversities in results that are found when we attempt to make out a case for any method by attributing to it alone results in cases in which it is a factor. It is impossible to prove the superiority of a method or a breed by a comparison of individual instances. The surest test is the test of time and general use. That test operates slowly, and leaves us always with a measure of uncertainty as to the final result; but in compensation it also gives us — if we heed it — caution in accepting results of new methods prematurely.

The situation with regard to the dry feeding of poultry to-day is that, without approaching a full demonstration of their claims for that method, the advocates of dry feeding have materially benefited many who were not successful in the use of the mash system, and have emphasized a principle, which may well be termed a fundamental principle in feeding, that had fallen into general disuse among those trying to feed poultry for best results, — that is, the very elementary principle that to lay well or grow well, fowls must be well fed.

A prominent feature of the teaching of the "balanced ration" advocates was the necessity of avoiding over-feeding. So insistently were the evils of over-feeding proclaimed, and so much were poultrymen impressed by this preaching, that among those trying to feed right over-feeding had become extremely rare, while it was a common thing to find poultrymen feeding rations just short enough of what they should be to give good egg yields. So general have I found this, that, beginning some years ago, in every case where a correspondent wrote asking what was the matter with his hens, that would not lay, in which I could find no special cause for failure, I have advised to feed a little more, and it is quite surprising how often this happens to give the results wanted.

Now, the dry feeding system, as usually advocated and practised, keeps food before the fowls all the time. They need never be hungry. And in nearly all cases where dry feeding has given better results than a system including a wet mash, and the wet mash used was of good consistency, I think it will be found that the dry feeding system owes its apparent superiority to the simple fact that by it the hens get enough to eat.

And that, as a matter of fact, is the prime factor in successful feeding. There are other points to consider. Hens must have exercise, and there must be some variety in their food, but above all, if we wish good development and good egg production, there must be abundance of food. And, from what I have seen of results of many different methods of feeding, I would say give abundance with variety; but,

if there is a choice between variety without abundance and abundance without variety, the latter is to be preferred. In abundance of food without variety we may get results and wear the fowl out quickly; in the other way we are more likely to keep a fowl just short of profitable performance.

Some of the best results in winter egg production I have ever seen have been obtained from flocks which were not handled in the best way. There were faults in the management during the winter which might have been avoided; but the poultrymen made their fowls pay better, in spite of these faults, than most others did without them, and they did this simply by working on the principle of giving their fowls all they could eat. I went one day to visit a poultry farmer who had the reputation of always getting good egg yields in winter. What I saw in the nests in his houses in the dead of winter seemed to justify his reputation. I asked him to what he attributed his success. He replied, "The only difference I can see between my poultry keeping and that of those poultrymen about here who complain that they can't get eggs is that I keep food before my hens all the time." His hens were inclined to get too fat toward the end of winter, and fall off in egg production; but he made more than he lost by heavy feeding.

A Maine farmer whose farm I visited several years ago had about five hundred hens, and kept cracked corn before them all the time. They had the range of the farm in summer, but were not out of the houses much in winter. He was said to be the only farmer in that neighborhood who always had eggs to ship to Boston in December and January.

I once asked one of the most successful poultry keepers of my acquaintance, a man who combines poultry keeping and general farming, what he thought was the principal thing in winter egg production. He replied that it had been his observation that if pullets were ready to begin laying about the beginning of winter they would begin and lay right through, provided they got enough to eat; and that he could not see that it made much difference — within the range of usual poultry foods — how or what they were fed; the all-important thing was to give them all they could eat. Of course he did not mean that the kind and quality of food made no difference. In making such a statement, it is understood that the reference is to rations such as good poultrymen would use.

Good feeding sometimes consists more in using to advantage waste products and cheap products than in getting large results. To do this the poultry keeper must be in a measure independent of systems, — not bound either by wrong conditions, or weak stock, or faults in his methods, to follow carefully a delicately balanced system.

SERIES OF 1906. VOL. 19. NO. 5.

MASSACHUSETTS CROP REPORT

FOR THE

MONTH OF SEPTEMBER, 1906.

CRANBERRY GROWING.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

Approved by

The State Board of Publication.

Crop Report for the Month of September, 1906.

Office of State Board of Agriculture,
Boston, Mass., Oct. 1, 1906.

Bulletin No. 5, Crop Report for September, is herewith presented. The article in this month's bulletin is one that should be of interest to many, as it touches an industry which is apparently exciting much interest, and which is not generally well understood. It is on "Cranberry growing," by Lucian J. Fosdick, whose exhibit on cranberry growing at the St. Louis Exposition will be recalled by many visitors to the fair. Mr. Fosdick has had an ample experience in the growing of cranberries, and has studied the matter from the side of distribution and handling of the crop, as well as from that of producing the berries.

Progress of the Season.

The monthly report of the Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture (Crop Reporter for September, 1906), shows the condition of corn on September 1 to have been 90.2, as compared with 88.1 a month earlier, 89.5 on the corresponding date in 1905, 84.6 in 1904, and a ten-year average of 81.

The average condition of spring wheat when harvested was 83.4, as against 86.9 a month earlier, 87.3 in 1905, and 66.2 in 1904. The condition in the five principal states is reported as follows: Minnesota, 79; North Dakota, 84; South Dakota, 88; Iowa, 93; and Washington, 75.

The average condition of the oat crop when harvested was 81.9, against 82.8 a month earlier, 90.3 on Sept. 1, 1905, 85.6 in 1904, and a ten-year average of 81.9.

The average condition of barley when harvested was 89.4, against 90.3 a month earlier, 87.8 on Sept. 1, 1905, 87.4 in 1904, and a ten-year average of 83.7.

The average condition of rye when harvested was 90.5, against 90.8 on Sept. 1, 1905, 86.9 in 1904, and a ten-year average of 86.5.

The average condition of buckwheat on September 1 was 91.2, against 93.2 a month earlier, 91.8 on Sept. 1, 1905, 91.5 in 1904, and a ten-year average of 88.4.

The average condition of tobacco was 86.2, as against 87.2 a month earlier, 85.1 on Sept. 1, 1905, 83.7 in 1904, and a five-year average of 81.8.

The average condition of potatoes on September 1 was 85.3, as against 89 a month earlier, 80 on Sept. 1, 1905, 91.6 in 1904, and a ten-year average of 79.2.

In Massachusetts the average condition of corn September 1 was given as 100; the average condition of oats when harvested as 95; the average condition of rye when harvested as 92; the average condition of buckwheat when harvested as 88; the average condition of tobacco as 100; the average condition of potatoes as 82; the average condition of beans as 81; the average condition of cabbages as 90; the average condition of onions as 80; the average condition of tomatoes as 88; the average condition of apples as 64; the average condition of peaches as 57; the average condition of grapes as 85; the average condition of cranberries as 75; the average condition of cantaloupes and muskmelons as 75; the average condition of watermelons as 80; the number of stock hogs fattening, compared with last year, as 97, and their average condition as to size and weight as 97.

Temperature and Rainfall for the Whole Country.

[From the National Weekly Weather Bulletins.]

Week ending September 3. — The week was warmer than usual in the Atlantic and Gulf coast districts, Ohio and upper Missouri valleys, and over the northern Plateau and middle Pacific coast regions. In the northern Lake region, over an area extending from northern Louisiana and northeastern Texas to the lower Missouri valley, throughout the southern Plateau region, over the greater part of California and on the extreme north Pacific coast, the week averaged cooler than usual. The rainfall exceeded the average in the Middle At-

lantic States and over the greater part of the South Atlantic States, very heavy rains having occurred over an area extending from northern Georgia to eastern Pennsylvania. A large part of the west Gulf States received no appreciable amount of rain. Much of the Lake region and a large part of the Ohio valley and southern New England also received less than the average rainfall.

Week ending September 10. — The week averaged warmer than usual throughout nearly the whole country, the temperature being below average only in central and southern California, western Arizona, southwestern Texas, extreme southern Florida and on the New England coast, where the deficiency was very slight. In the upper Ohio valley and Atlantic and Gulf coast districts the temperature excess was less than 3° a day, but in the Lake region and from the upper Mississippi valley westward it averaged from 6° to 12° per day. In the upper Mississippi and Red River of the North valleys and Lake region, and over a large part of the upper Mississippi and Ohio valleys and Middle Atlantic States, there was either an entire absence of rain or inappreciable showers, and the rainfall was much below the average over the greater part of the South Atlantic States and much of the central Gulf districts. The rainfall exceeded the average over the greater part of Texas, in Tennessee, portions of the central and east Gulf States, and over limited areas in the central Mississippi and lower Ohio valleys.

Week ending September 17. — The week was cooler than usual in the Rocky Mountain and Plateau regions, over the greater part of the Pacific coast and in the upper Missouri valley. Throughout the central valleys, Lake region and the Atlantic coast and Gulf districts the week was warmer than usual, the temperature excess ranging from 6° to 9° per day in the central valleys and Lake region, but being less than 3° per day in New England. Over most of the country east of the Mississippi River, as well as over the greater part of the west Gulf States, the precipitation was lighter than usual. Over a large part of the lower Lake region and in portions of the Southern States and Atlantic

coast districts there was no appreciable rainfall. From the north Pacific coast eastward to the Missouri valley, including Kansas, Oklahoma, Indian Territory, the northern portion of the upper Mississippi valley and the upper Michigan peninsula, the rainfall was much above the average.

Week ending September 24. — The week was warmer than usual in all parts of the United States, except over the middle Rocky Mountain slope and portions of the middle Plateau region, where the mean temperature was below the normal. From Minnesota westward to the north Pacific coast, and in the central valleys, Lake region and the Atlantic coast and Gulf districts the week was exceptionally warm. From the central Mississippi valley eastward to New England the temperature excess generally ranged from 6° to 10°. During the week heavy rains occurred in the east Gulf States, in portions of the Carolinas, Tennessee and Kentucky, in southern New England and over an area extending from Oklahoma northward to eastern South Dakota. In the Middle Atlantic States and Florida, and generally throughout the Lake region, central valleys and west Gulf districts the rainfall was below the average, areas of considerable extent in Texas and the central Mississippi valley receiving no appreciable amount. There was a general absence of rain throughout the Plateau regions and in southern California.

Special Telegraphic Reports.

[Weather Bureau, Boston.]

Week ending September 3. — New England. Boston: Generally copious showers occurred throughout the section on the 27th; clear weather prevailed the remainder of the week. The temperature was seasonable, except on Saturday and Sunday, when it was cool, and light to killing frosts occurred in parts of New Hampshire Sunday morning. Copious rain is generally needed.

Week ending September 10. — New England. Boston: Light showers were general on the 3d, and scattered light showers occurred in parts of Maine and Vermont on the 9th. The weather is now very dry. Rain is much needed, particularly in Maine, New Hampshire, eastern Massachusetts

and Rhode Island, to replenish wells and streams, which are very low. The temperature was low during the first half of the week, light frosts occurring in places on the 5th and killing frosts in central New Hampshire. The mean temperature was above the normal during the latter part of the week. There was abundant sunshine.

Week ending September 17. — New England. Boston: Scattered showers occurred in Maine and Vermont on the 9th and 10th, in Massachusetts, Rhode Island and Connecticut on the 13th, and in parts of the sections on the 14th; on other dates there was abundant sunshine. Except in eastern Rhode Island, where heavy rains occurred, rain is badly needed. Some interior stations reported light frosts on the 15th and 16th. Freezing temperature occurred in northern Vermont on the 15th.

Week ending September 24. — New England. Boston: Copious showers occurred in Massachusetts, Rhode Island, Connecticut, Vermont and southern New Hampshire, and very light showers occurred in Maine on Friday and Saturday; otherwise, the weather was generally clear. Rain is much needed in Maine and northern New Hampshire, where the weather continues very dry; drought has been relieved over the remainder of the section. The temperature was much above the normal, and maximum temperatures above 90° occurred on the 19th in the southern portion of the section.

The Weather for September, 1906.

The month opened with several days of rather cool weather, and temperatures ranging from 2° to 6° below the seasonal average. On the 3d light to moderate showers were quite general. From this date to the 12th inclusive there was almost an entire absence of rain, and there were few cloudy days. The temperatures during this time were generally in excess of the average, ranging as high as 90° during the midday hours in many sections on several days. Showers, mostly light, were prevalent on the 13th and the 14th, and these were followed by fair weather, with seasonal temperatures till the 19th inclusive. The 18th and the 19th were warm days, the temperatures rising to or above 90° in nearly

all sections. Showery conditions obtained from the 20th to the 23d inclusive, during which period the rainfall was copious in all, and quite heavy in some, sections. The rain was very beneficial, as the droughty conditions were being felt generally, and in some localities the ground was exceedingly dry, and ponds and streams were becoming very low. A cool wave passed over the district from the 24th to the 26th, during which time light to moderate frosts occurred in favorable localities, and in some instances thin ice formed. During the remainder of the month the temperatures ranged near the seasonal average, with fair weather, except on the 30th, when rains occurred. As a whole, the month was very pleasant, and characteristic of the season.

In the circular to correspondents returnable to us September 25 the following questions were asked: —

1. How does the crop of Indian corn compare with a normal crop?
2. Are the rowen crop and fall feed up to the usual average?
3. Has the usual amount of fall seeding been done, and what is its present condition?
4. How does the onion crop compare with a normal crop?
5. How do potatoes compare with the normal in yield and quality?
6. What is the prospect for root crops, celery and other late market-garden crops?
7. How have apples, pears, peaches, grapes and cranberries turned out?

Returns were received from 142 correspondents, from which the following summary has been made: —

Indian Corn.

The corn crop would appear to be a bumper one in every respect, and to have been secured in good condition, with practically no damage from frost. Somewhat backward the greater part of the season, it nevertheless made a fine, healthy growth; and the hot, dry weather of the latter part of August

and the first of September proved to be just what was needed to mature the crop in the best condition. There has seldom been a better crop for grain than that of the present year, while the stover was also generally luxuriant and well developed. There being no killing frosts until late in the month, the crop was secured practically without damage, both for grain and for the silo.

Rowen and Fall Feed.

On early cut fields rowen was a luxuriant crop, while on those where the first crop was not secured until the latter part of July there was a comparatively light crop. The general average was probably a little above that of a normal year for the State as a whole, though particular localities showed variations from the normal in either direction which were sometimes quite marked. The weather of September being generally fair and warm, the crop was in the main secured in good condition. The feed in pastures suffered considerably from the prolonged drought, turning brown in some instances, and practically ceasing to be depended upon for stock. With the rains of the latter part of the month a considerable improvement is noted.

Fall Seeding.

Much less than the usual amount of fall seeding has been done, owing to the dry weather, which made farmers reluctant to sow. That which has been put in appears to have come forward very slowly, except on moist land; and it is not now in as good condition as it normally would be, though considerably improved by the recent rains. These rains also have put the soil in excellent condition for such fall seeding as remains to be done, and it will undoubtedly be rushed from this out.

Onions.

Onions are considerably below a normal crop for the State as a whole, blight being reported from most sections, and apparently being most serious in its effect on the crop in the regions of main production. Onions cured down small, owing

to blight, and the crop is thus much reduced. No rot of any amount has been reported. Harvesting progressed rapidly, on account of the favorable weather; but the crop is reported as moving slowly, and at not particularly favorable prices.

Potatoes.

The potato crop appears to be considerably above what was predicted from the returns of last month, doubtless owing to the fact that the dry, clear weather checked the blight, and prevented it from developing into rot in many cases. The crop, however, is considerably under normal, there being many complaints of small size of tubers, and some rot also appearing in various sections. The quality otherwise appears to be excellent, with not much damage from grubs or wire worms. Sprayed fields seem to have done very well, as a rule, so that it is probable that the shortage of the crop may be attributed almost entirely to the effects of the early blight.

Root Crops, Celery, etc.

Root crops generally suffered somewhat from drought in September, but otherwise are reported as doing well. Celery suffered severely from the same cause, especially the early varieties, and a short crop of these is certain. Later sorts may do well if there is the necessary amount of rain for the rest of the season. Late market-garden crops other than celery also suffered from drought, and will generally make light yields. Squashes are reported as rather below the normal. Cabbages generally have done fairly well.

Fruit.

Apples dropped badly during the month, and a light crop is all that can be expected, some localities reporting nearly a total failure. Reports as to quality vary, but, on the whole, a fairly good quality seems to be the rule. Pears are a fair crop, but in some sections are reported as not selling well, the cost of picking being so great as to make it inadvisable to harvest the crop. Peaches have not yielded as well as expected, on the whole, and but a light crop has been secured.

Prices have ruled high throughout the season. Grapes are not yielding as well as was expected, considerable rot and mildew being reported, in spite of the apparently favorable weather conditions; nevertheless, a fair crop will be secured. Cranberries have generally done well, and a good average crop is expected. They have also been generally secured in good condition, harvesting being nearly completed at the time of making returns.

NOTES OF CORRESPONDENTS.

(Returned to us September 25.)

BERKSHIRE COUNTY.

Alford (Lester T. Osborne). — Indian corn is twenty per cent above an average crop. Rowen and fall feed are both above the usual average. The usual amount of fall seeding has been done, but the dry weather retards its growth. Potatoes are twenty per cent above a normal crop. Apples are half a crop, and pears above the average.

Tyringham (Edward H. Slater). — The corn crop is better than usual. Rowen and fall feed are up to the normal in condition. The usual amount of fall seeding has been done, and is looking well. Only a few onions are raised in this town. Potatoes compare favorably with the normal in yield and quality. The apple crop is not as large as usual.

Becket (Wm. H. Snow). — The crop of Indian corn is the best we have had for years. Rowen and fall seed are fully up to the normal, especially the rowen crop. The usual amount of fall seeding has been done, and it is looking well. There are few onions raised, but what there are, are a fine crop. Potatoes are fully a normal crop of good quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are scarce; pears good; grapes and cranberries good.

West Stockbridge (J. S. Moore). — There is about a normal crop of Indian corn. Rowen and fall feed are up to the usual average, the recent rains having improved them very much. The usual amount of fall seeding has been done, and it is in fairly good condition. Potatoes are better than an average crop so far as dug, though some rot is reported. Apples looked well for a while, but seem to be dropping badly. More attention than formerly is being paid to dairy farming and poultry raising. Scarcity of farm help has delayed haying and harvesting.

Richmond (Timothy B. Salmon). — The crop of Indian corn is one of the best in years. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in very good condition. Onions are little raised. Potatoes are about an average in yield and of good quality. There are very few apples; pears a large crop; no peaches; some grapes; no cranberries. No frost as yet to do any damage.

Washington (E. H. Eames). — There is a full corn crop. Rowen and fall feed are up to the usual average. No fall seeding has been done as yet. Onions are not raised here. Potatoes are half a crop in yield, but of good quality. Root crops, celery and late market-garden crops are not raised here. Apples will be a very light yield, about one-fourth of a normal crop.

Hinsdale (Thos. F. Barker). — Indian corn is above an average crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Onions are not raised here. Potatoes are below the normal in yield, but of good quality. Root crops, celery and late market-garden crops are but little raised. Fruit of all kinds is nearly a perfect failure.

Cheshire (L. J. Northup). — The corn crop compares favorably with a normal yield. Fall feed and rowen are up to the usual average. No fall seeding has been done as yet. The onion crop is a normal one, but there are very few raised. The potato crop is good in quality, but is 25 per cent below the normal in quantity. Root crops are up to the normal. Apples are half a crop; pears a full crop; grapes a normal yield.

New Ashford (Elihu Ingraham). — Indian corn is a full normal crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in fine condition. Onions are a very good crop, so far as raised. The yield of potatoes is poor, but they are of good quality. Root crops, celery and late market-garden crops are not raised here. Apples are a light crop.

FRANKLIN COUNTY.

Rowe (N. E. Adams). — Corn is the best it has been for years. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, but it is not an extra good catch. Onions are not raised here. Potatoes are poor both in quantity and quality. There is a poor yield of all fruits. All garden vegetables have been better than normal.

Ashfield (Charles Howes). — Corn is the best crop for years. Rowen is above an average crop, although grasshoppers have damaged late rowen and fall feed. About the usual amount of seeding has been done, and the late rains have given it a good start. But very few onions are raised in this vicinity. Potatoes are yielding fairly well, but with some complaint of rot. Root crops and celery are looking well. Baldwins are not over 25 per cent of a crop, other apples about average yields; pears, peaches, etc., light crops.

Leyden (U. T. Darling). — There is a good crop of corn. The rowen crop is very good, but dry weather is seriously affecting fall feed. The usual amount of fall seeding has been done, and it is looking very well, considering the dry weather. Very few onions are raised here. Potatoes are a very good crop in both yield and quality. The

prospect is fair for root crops, celery and other late market-garden crops. There will not be over 30 per cent of an average crop of apples; pears good; but few peaches; grapes good.

Gill (F. F. Stoughton). — Indian corn is better than an average crop. Rowen and fall feed are up to the usual average. Onions are not raised to any great extent. Potatoes are not yielding well. Root crops, celery and other late market-garden crops are little raised. Late apples are light in yield; grapes good.

Deerfield (H. A. Wells). — Indian corn is above an average crop, with ears mature and sound. The rowen crop is the best that has been cut for several years. All seeding in this locality is done in corn, and it is looking well. There is a light yield of potatoes, but they are of good size and quality. Onions are not half a crop. Root crops, celery and other late market-garden crops are not grown. There are very few apples; pears a fair crop; grapes plenty.

Whately (Frank Dickinson). — Indian corn is a good crop, but is late. Rowen is late and short; fall feed good. Owing to dry weather, fall seeding is late, but it is now coming on fast. Onions are below the average in yield. Potatoes are below the normal in yield, with quite a little rot. The prospect is fair for root crops, celery and other late market-garden crops. Apples are not over half a crop.

Sunderland (Geo. P. Smith). — The corn crop is one of the best, normal or better. Rowen and fall feed are better than average, local rains having kept them fresh. The usual amount of fall seeding has been done, and it is in fair condition, being below the normal on dry fields. There is 60 per cent of a normal crop of onions; they run small in size, with the market dull. Not many potatoes have been harvested, but they are apparently a fair crop. Root crops, celery and other late market-garden crops are not much grown.

Montague (A. M. Lyman). — Indian corn compares well with a normal crop. Rowen is better than usual, but fall feed is a little short. The usual amount of fall seeding has been done, and it is showing well. There will be a yield of 300 bushels of onions to the acre, as compared with 500 bushels last year, which was an average year. There will be a fair yield of potatoes. The prospect is very good for root crops, celery and other late market-garden crops. Apples are hardly more than a quarter crop; other fruits fair; grapes are an excellent crop; melons have done well.

New Salem (Daniel Ballard). — Indian corn is a normal crop, well ripened. There is a fine crop of rowen, and fall feed is fully average. About the usual amount of fall seeding has been done, and it is looking well. Onions are not much raised in this section. Potatoes appear to be a fair yield of good quality. Root crops look well, and there is not much celery raised. There will be a fair yield of apples on high land; pears and grapes abundant; no peaches; but few cranberries.

Orange (A. C. White). — Corn is a good crop, well cared and matured.

Rowen and fall feed are up to the usual average. Very little fall seeding has been done, and it has been so dry that it has not germinated. Yield of potatoes very good, but they are rotting very badly. There will be a very light crop of fruit of all kinds.

HAMPSHIRE COUNTY.

Ware (J. H. Fletcher). — Indian corn is a very good crop. Rowen is more than an average crop, and fall feed is good. More than the usual amount of fall seeding has been done, and it is looking well at present. Onions are not much grown. Potatoes are about average in yield and quality. The prospect is very good for root crops, celery and other late market-garden crops. Apples are not as plenty as some years; peaches about 60 per cent; wild grapes a good yield; not many cranberries.

Prescott (W. F. Wendermuth). — The corn crop is fully up to the average. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Onions are not grown for market. Potatoes are very uneven, some fields good, others very poor, and with considerable rot; probably not over three-fourths of a full crop. Root crops, celery and late market-garden crops are not grown for market; root crops for stock feeding fairly good. Apples 60 per cent of a full crop; pears 100 per cent; peaches a failure; grapes 90 per cent; cranberries not grown.

Enfield (D. O. Chickering). — Indian corn is better than usual. Rowen and fall feed are up to the usual average. But few onions are grown in this section. The yield of potatoes is light, and the quality good. Root crops, celery and late market-garden crops are not raised for market, but are good yields so far as noted. Very few winter apples; pears, peaches and grapes abundant.

Amherst (Wm. P. Brooks). — The corn crop is rather above the average. Rowen and fall feed are much above the average. Fall seeding has mostly been done in corn; the average amount has been done, and it has started well. Onions are rather uneven; there are a few good crops, but many fields have suffered from blight; on the whole, there is about an average crop. Potatoes are rather above the average both in yield and quality. Root crops are but little grown, but are good yields; celery badly rusted on some fields, and not as good as usual. Apples are very uneven, but a fair crop; pears little grown, but a good crop; peaches good; grapes show poor foliage, and are not ripening well; no cranberries grown.

Hatfield (Thaddeus Graves). — Indian corn is a fine crop, 20 per cent above the average. Rowen and fall feed are rather better than usual. The usual amount of fall seeding has been done, and it is in good condition. Onions are about 60 per cent of a normal crop. Potatoes show a small yield, but are of good quality. The prospect for

root crops, celery and other late market-garden crops is at present promising. There is about a third of a crop of fruit. Tobacco was a fine crop, and has cured well.

Northampton (H. C. Comins). — The corn crop is above the average. The rowen crop is very heavy, and fall feed fair. About the usual amount of fall seeding has been done, and it is looking well. The onion crop is not up to the standard, not more than a three-fourths crop. There is a fair yield of potatoes, of good quality. There is a promise of good crops of all vegetables. There is a small crop of apples; pears and grapes good crops. All crops have been fairly good, and many excellent.

Westhampton (H. A. Parsons). — Indian corn is a good crop. Rowen and fall feed are up to the usual average. About the usual amount of fall seeding has been done, and it is in good condition. Onions are not raised here. Potatoes are a good crop in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are half a crop; pears a good crop; no peaches; grapes a two-thirds crop.

Chesterfield (Horatio Bisbee). — Corn is a very fine crop. Rowen and fall feed are up to if not above the usual average. About the usual amount of fall seeding has been done, but it has not started well. There is not a very large crop of potatoes, and the tubers are small in size. The apple crop is very small; pears and grapes are good. There has been no frost to injure vegetation as yet.

Cummington (S. W. Clark). — Indian corn is somewhat above a normal crop. Rowen and fall feed are above the usual average. But little fall seeding has been done. Only one man raises onions, and he had a fair crop. The yield of potatoes is light, with some loss from rot, but the quality is otherwise fair. The prospect is very good for root crops, celery and other late market-garden crops. Apples half a crop, or less; other fruit normal.

HAMPDEN COUNTY.

Tolland (Eugene M. Moore). — Indian corn is more than an average crop. Rowen and fall feed are about the usual average. Potatoes are of good quality, and about three-fourths of an average crop in yield. Apples have dropped somewhat; pears, grapes and cranberries have turned out good crops.

Blandford (Enos W. Boise). — The warm weather has brought forward corn to the extent that it will be 10 per cent above the normal. Rowen and fall feed are extra good. No fall seeding has been done, on account of dry, warm weather. Onions are not raised as a market crop. Potatoes are not up to the normal in yield, but are of good quality. Root crops, celery and other late market-garden crops promise about normal yields. Apples are fully 80 per cent of a normal crop,

fair and coloring well; pears have been a full crop; other fruits not raised to any amount.

Granville (Joseph Welch). — Corn is a very good crop, the best in several years. Rowen is very good; fall feed suffered on account of the dry weather. Very little fall seeding has been done. Potatoes are about half a crop, and of small size. There will be about half a crop of apples; pears a large crop; cranberries a good yield where grown.

Agawam (J. G. Burt). — Indian corn is better than a normal crop. The rowen crop and fall feed are better than usual. About the usual amount of fall seeding has been done, and the condition is good. The onion crop is a little better than usual. Potatoes are a good yield, of fine quality. The prospect for root crops is fine. Apples are a light crop; other fruits good. Tobacco growers are taking down the crop, and it is in fine condition.

West Springfield (T. A. Rogers). — The corn crop shows the largest acreage on record, and is fully up to the normal in quantity. Rowen and fall feed are fully up to the usual average. The usual amount of fall seeding has been done, and it is looking well. Onions have suffered quite a little from blight, and there is hardly a normal crop. Potatoes are rather below the normal in yield, but of good quality. Hardly as many root crops as usual have been planted; celery is looking rather poorly. Apples 60 per cent of a full crop; pears a full crop; peaches good; grapes short.

East Longmeadow (John L. Davis). — The corn crop is a bumper one. Early mowed meadows show good rowen; pastures are dry. The weather has been too dry to put in fall seeding, and it is therefore backward. Onions are not raised. Quality for potatoes good, except for scab; yield about 75 per cent of a full crop. The prospect for root crops, celery and other late market-garden crops is poor; turnips and cabbages almost a failure. Apples are half a crop; peaches a three-fourths crop; grapes plenty; no cranberries raised for market.

Wilbraham (H. M. Bliss). — Indian corn is a full crop. Rowen and fall feed are nearly up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Onions are 85 per cent of a normal crop. Potatoes are but half a yield, of fair quality. The prospect for root crops, celery and other late market-garden crops is fairly good. Apples half a crop; pears 85 per cent; peaches 90 per cent; grapes 95 per cent; cranberries 70 per cent.

Ludlow (Chas. B. Bennett). — Indian corn is more than an average crop. Rowen and fall feed are up to the usual average. Very little fall seeding has been done, owing to dry weather. Potatoes are not half an average crop. The prospect is very good for root crops, celery and other late market-garden crops. Very few apples; pears plenty, also grapes; very few peaches.

Brimfield (C. S. Tarbell). — Corn is quite up to or above the average.

We seldom see rowen and fall feed so good. Fall seeding has been held back by the dry weather, especially on dry soil. The yield of potatoes is rather a disappointment; early potatoes very light. The prospect is good for root crops, celery and other late market-garden crops. Apples fair; pears good; peaches light; grapes good.

Holland (Francis Wight). — Indian corn is up to an average with the yields of other years. Rowen and fall feed are up to a full average. The usual amount of fall seeding has been done, but it has been too dry for it to develop well. Potatoes are below the normal crop in yield and quality. There is a light crop of apples, peaches, grapes and cranberries.

WORCESTER COUNTY.

Dudley (J. J. Gilles). — The crop of Indian corn is fully equal to a normal crop. Rowen and fall feed are somewhat above the usual average. The usual amount of fall seeding has been done, and it is in fine condition. Onions are raised only in a small way. Potatoes are light in yield, and hardly fair in quality. The prospect is good for root crops, celery and other late market-garden crops. The apple crop is very uneven, some orchards showing full yields, and others scarcely any; grapes and cranberries have turned out well.

Brookfield (Frank E. Prouty). — Indian corn is a good crop. Rowen is good; fall feed was getting dry, but the rain Sunday improved it. The usual amount of fall seeding has been done, but it is not up to the average in condition. But few onions are raised here. Potatoes are a good crop in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are about half a crop; pears good; but few peaches raised, but a good yield; grapes about average.

West Brookfield (Myron A. Richardson). — Corn is a fine crop, a heavy growth of stover and well cared. Rowen and fall feed are extra in quality and quantity. The usual amount of fall seeding has been done, and thus far it is looking finely. Potatoes are not a normal crop, but are of good quality, with no rot. The apple crop will be below the average, on account of late spring frosts, and good apples are scarce and high.

North Brookfield (J. H. Lane). — The corn crop is fine as regards grain, but the stover is badly rusted. Rowen and fall feed are above the usual average. Very little seeding is done in the fall in this locality. Potatoes are a good crop in quantity and quality, with very little rot. Apples 20 per cent of a full crop; pears 40 per cent; no peaches; grapes 80 per cent; cranberries 5 per cent.

Oakham (Jesse Allen). — Indian corn is an excellent crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it looks well. Potatoes are not more than two-thirds of a crop, of fair quality. Root crops, celery and late

market-garden crops are little raised. There is a very light yield of all fruits.

Dana (Lyman Randall). — Corn is fully an average crop. Rowen and fall feed are up to the usual average. Very little fall seeding has been done, but that which has been put in looks well. The potato crop is light, not more than half a crop. Onions are not raised here. Root crops promise very well; celery a fair crop; cabbages poor. Apples, pears and peaches are very light crops; grapes and cranberries fair.

Petersham (B. W. Spooner). — Indian corn compares very favorably with a normal crop, and is being harvested earlier than usual. More rowen has been cut than for years. Very little fall seeding has been done as yet, but it will be put in later. Onions are only raised for family use. There is about half a crop of potatoes, of good quality. All garden crops have done well. Apples, pears and grapes are normal crops; very few peaches.

Royalston (C. A. Stimson). — There is a full crop of Indian corn. Rowen and fall feed are not up to the usual average. The usual amount of fall seeding has been done, but it has suffered from drought. There is a full crop of potatoes, but they are rotting somewhat. The prospect for root crops, celery and other late market-garden crops is good. There will be a short crop of all kinds of fruit.

Phillipston (A. D. Clifford). — Indian corn is about an average crop. Rowen and fall feed are above the usual average. Not much fall seeding has been done in this section. No onions are raised here. Potatoes are below the average in yield, but of good quality. Root crops have done well. Pears and grapes are average crops; very few apples; no peaches.

Templeton (Lucien Gove). — Corn shows a good rank growth of stover, but some fields have been slightly injured by frost. Rowen is a heavy crop where the first crop was cut early, and fall feed is better than the average. Less than the usual amount of fall seeding has been done, and it is in only fair condition. Potatoes are below the normal in yield, but of good quality. The prospect for root crops is good; celery is not raised to any extent. Apples are a very poor crop; pears good; no peaches; grapes good.

Fitchburg (Jabez Fisher). — Rowen is a light crop, except following early cut hay; fall feed very short, from want of rain. The yield of potatoes is rather small, and their quality only fair. Apples and pears have done unusually well; peaches less so; grapes only fair, with considerable rot and mildew. Fruits are quite variable in size of crop, but are mostly of good size and color, and unusually free from blemishes.

Princeton (A. O. Tyler). — Indian corn is rather better than a normal crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Potatoes are about an average crop in both quantity and quality. The prospect is good for root crops, celery and other late market-garden

crops. Apples are plenty on high land; no peaches; pears plenty; grapes normal; no cranberries.

Sterling (Henry S. Sawyer). — Indian corn is much less than a normal crop. Rowen and fall feed are above the usual average. The usual amount of fall seeding has been done, and it is in good condition. Very few onions are raised. Potatoes are less than a normal crop, and are of poor quality. Root crops are looking well, and there is the prospect of a good crop. There are good yields of apples, pears and grapes; very short crops of peaches, plums and cranberries.

Shrewsbury (Fred J. Reed). — The crop of Indian corn is about a normal one. Rowen is above the average, and fall feed about average. The usual amount of fall seeding has been done, and it is in fair condition. Onions are a little below a normal crop. Potatoes are a light crop, and are rotting badly. The prospect is very good for root crops, celery and other late market-garden crops. Apples and peaches are very short crops; pears and grapes not up to the normal.

Worcester (H. R. Kinney). — Indian corn has done better than the average of late years. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, but it has been damaged somewhat by the hot, dry weather. There is a fair crop of onions, of good quality. Potatoes are a light crop, of poor quality. Celery is doing well; parsnips and carrots blighted. Apples are a good crop; pears fair; peaches and plums poor. The recent dry spell damaged cauliflower and celery on dry land.

Leicester (H. H. Kingsbury). — Favorable weather conditions have developed a fine crop of corn. There is a large crop of rowen on early cut fields; pasturage has been shortened by hot, dry weather. No fall seeding has been done as yet. Onions are not raised. There is a small crop of potatoes, of very good quality. The weather at present appears to favor the thrifty growth of all root crops which are not matured. Apples are about 75 per cent of a full crop; pears 80 per cent; grapes 25 per cent; no peaches nor cranberries.

Mendon (J. J. Nutter). — Not much Indian corn is raised in this vicinity, but it is looking well. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is looking well since the rain. Onions are not much grown. There is a light crop of potatoes, with a smaller acreage than usual. The prospect is good for root crops, celery and other late market-garden crops. There is a small crop of apples, but good yields of peaches, pears and grapes.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Corn has eared better than usual, but the fodder is not quite as heavy as ordinarily. The rowen crop is above the average, but fall feed is light. The usual amount of fall seeding has been done, but dry weather has kept it a little backward. Potatoes are about a normal crop; tubers a little smaller than usual,

but of good quality. Root crops are little raised; turnips look well. Apples medium crop and good quality, with size above average; pears poor; peaches good quality, but not a heavy crop; grapes a good crop, but with some blight.

Framingham (J. S. Williams). — There is a normal crop of Indian corn. Rowen made a heavy growth, but the dry weather injured fall feed. The usual acreage has been seeded, and it is looking as well as could be expected, with weather conditions as they have been. Onions blighted somewhat. The potato crop is 80 per cent of a normal crop. All kinds of roots are very good, as a rule; celery has made good growth and promises well. Apples turned out better than was expected; good crops of peaches and grapes; pears not as good quality as usual.

Marlborough (E. D. Howe). — Indian corn is 90 per cent of a full crop. Rowen and fall feed are better than usual. Not much fall seeding has been done, because of dry weather. The onion crop is three-fourths of a normal crop. Potatoes are 75 per cent in yield and quality, and are rotting badly. Celery is rusting badly. Apples 60 per cent; pears 50 per cent; peaches 25 per cent; grapes 75 per cent.

Stow (Geo. W. Bradley). — Corn will average better than for some years. Rowen is a good crop, but fall feed has suffered from drought. On low ground fall seeding looks well, but not on high ground. Some fields of potatoes are yielding well, and are of good quality. Root crops, celery and late market-garden crops are not raised. Apples and pears are very good crops.

Maynard (L. H. Maynard). — Indian corn is above the average in yield and quality. The rowen crop is extra good on early cut fields. About the average amount of fall seeding has been done, but it is somewhat backward, owing to nearly a month of dry weather. The onion crop is above the average in this locality. Potatoes promise a good crop, with quality excellent. Root crops are about average; celery and late market-garden crops will be above normal. Fruit of all kinds is about an average crop; apples are a little earlier than usual, and of extra good quality, yield much larger than expected, and selling well.

Littleton (Geo. W. Sanderson). — Corn is mostly raised for the silo. Rowen and fall feed are above the usual average. Fall seeding is backward. But very few onions are raised as a market crop. Potatoes compare favorably with the normal in yield and quality. The outlook is good for root crops, celery and other late market-garden crops. Apples are a fair average crop in most localities; pears very good; grapes and cranberries not average.

Townsend (G. A. Wilder). — There is a normal crop of Indian corn. Rowen and fall feed are not up to the usual average, owing to dry weather. About the usual amount of fall seeding has been done. There is a normal crop of onions. Potatoes are not up to the average in yield, and are only fair in quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are a full crop

in some sections, but as a whole below average in yield; other fruits about average.

Pepperell (W. F. Dennen). — The corn crop is light about here. Rowen was shortened by dry weather. A good deal of fall seeding is being done, but people are late about it. No onions are raised here. Potatoes are about normal in yield, and of good quality. Root crops, celery and other late market-garden crops are not raised for market. There will be but few apples; other fruits not raised for market.

Dunstable (A. J. Gilson). — Indian corn is about a normal crop. The rowen crop is above the normal, but fall feed has dried up badly. The usual amount of fall seeding has not been done, but some of that seeded early on low land is looking finely. The onion crop is below the normal. Potatoes are about a normal crop, and of good quality. Root crops are only raised for home use, but promise well. There will be light yields of all kinds of fruit.

Concord (Wm. H. Hunt). — There is a good corn crop. There is a good crop of rowen, and fall feed looks well. About the usual amount of fall seeding has been done, and it is in fair condition. Potatoes are of good quality, but not quite up to the normal in yield. Root crops, celery and other late market-garden crops are looking well. Apples will not be quite a full crop; pears good; other fruits fair.

Wakefield (Charles Talbot). — Indian corn is about an average crop, as compared with former years. Rowen and fall feed are very good. There has not been much fall seeding done this year. Onions are fully up to the standard in quantity and quality. Potatoes are a much heavier yield than in any former year. The prospect is good for root crops, celery and other late market-garden crops, although lack of rain has hurt them somewhat. No peaches; apples light; all other fruits large yields; cranberries an immense yield.

Stoneham (J. E. Wiley). — Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, but it is backward, on account of dry weather. Potatoes are a good average crop in yield and quality. Apples poor; pears fair; grapes fine; cranberries poor.

Arlington (W. W. Rawson). — Onions are not a normal crop. Potatoes are not up to the normal in yield and quality. The prospect is very poor for root crops, celery and other late market-garden crops. The season has been a very peculiar one, and unless we have heavy rains soon, all fall crops will be very light.

Weston (Henry L. Brown). — There is a good crop of corn, well ripened. Rowen is up to the usual average, but owing to dry weather, feed is now short. Some fall seeding has been done, but it has been so dry that it could not come up except on moist land. The yield of potatoes is light, but they are of good quality. In some places root crops are looking well, while in others they are small, owing to dry weather. There is a light apple crop; pears about normal; some good peaches; not many grapes grown here, and no cranberries.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — There is more than a normal crop of Indian corn, and it is extra large. There is perhaps less than the usual average of fall feed, on account of drought. Not much fall seeding has been done this season, and it is not looking well, on account of dry weather. There is a good normal yield of potatoes, with no rot. Root crops, celery and other late market-garden crops are about average with other years. Apples very light; pears fair; peaches good; grapes good; cranberries good; plums poor. On the whole, rowen is a good average crop, heavy on early cut fields and light on late.

Haverhill (Eben Webster). — The corn crop is fully up to the normal. Rowen and fall feed are up to the usual average. Less than the usual amount of fall seeding has been done, owing to drought. Onions are a good normal crop. Potatoes are good in both yield and quality. Root crops, celery and other late market-garden crops are looking well. Apples and pears are about normal crops; peaches light; grapes fair.

Andover (Milo H. Gould). — Indian corn compares favorably with the normal. Rowen and fall feed are above the average. Not as much fall seeding has been done as usual, and the dry weather has hurt that which was done. Onions are below the average, and are rotting somewhat. Potatoes are a good crop and of good quality. Celery is a poor crop, on account of blight; other late market-garden crops promise well. Apples are an average crop; pears plenty; peaches good; grapes good; cranberries below average.

Newbury (George W. Adams). — There is a good average crop of corn. Rowen and fall feed are at least 10 per cent above the usual average. The usual amount of fall seeding has been done, but it is backward. Onions are three-fourths of a normal crop. Potatoes are a good crop in both yield and quality. Root crops, celery and other late market-garden crops have suffered too severely from drought to recover fully. There are very few apples; pears abundant and poor; peaches 60 per cent of a full crop; grapes a failure; cranberries below average.

Rowley (D. H. O'Brien). — Indian corn compares favorably with a normal crop. Rowen and fall feed are above the average. The usual amount of fall seeding has been done, and it is in satisfactory condition. Onions are below an average crop. Potatoes have yielded fairly well, and are of normal quality. The prospect for root crops is good; celery poor. Apples fair; pears, peaches and grapes good; cranberries poor. Strawberry beds are looking extra well.

Wenham (N. P. Perkins). — Not much corn is grown except for the silo. There is more rowen than last year, but not as much as was expected. Less than the usual amount of fall seeding has been done,

and what there is has been slow in coming up. Here and there a field of onions is fairly well matured, but many are blighted and dried down small. Potatoes are a fine crop, but are little raised hereabouts. Beets, carrots and parsnips are below the average; celery not much raised. There is a fair crop of apples; few pears and peaches; no cranberries; apples are small, and not highly colored. There is not a great crop of squash. Tomatoes are plenty and cheap, but the late crop may do better.

NORFOLK COUNTY.

Walpole (Edward L. Shepard). — Indian corn is above the normal. Rowen and fall feed are up to the usual average. Less than the usual amount of fall seeding has been done, owing to dry weather. Onions are not much raised in this locality. Potatoes are of good quality, but are rather light in yield. Root crops, celery and other late market-garden crops are not up to the normal. Apples, pears, peaches, grapes and cranberries are about half crops.

Franklin (C. M. Allen). — There is a full average crop of Indian corn. Rowen and fall feed are better than for years. The usual amount of fall seeding has been done, and it looks well. Onions are not raised. Potatoes are a very good crop, both in yield and quality. The prospect is that root crops, celery and other late market-garden crops will give average yields. Apples are a good crop; pears poor; peaches and grapes few; cranberries light.

Bellingham (John J. O'Sullivan). — Indian corn is a good average crop. Rowen and fall feed are about the same as usual. The usual amount of fall seeding has been done, but it is backward, owing to dry weather. Onions are little raised, but so far as grown will give an average crop. Potatoes have made a small yield, but are of fair quality. Root crops, celery and other late market-garden crops are very little raised about here. Apples are a good crop; other fruits poor.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — There is about a normal crop of corn. The rowen crop is about the same as usual in amount, but was secured in good shape, helping to make up for the poor quality of the hay crop; fall feed has suffered from drought. The weather has been too dry for fall seeding. Potatoes are not generally harvested, but the yield and quality is expected to be normal. Root crops, celery and other late market-garden crops are looking well. Apples, peaches and grapes are failures; pears fair; cranberries an average crop.

Attleborough (Isaac Alger). — Indian corn is a full average crop. Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is in good condition. Potatoes are about an average crop in both yield and quality. The prospect is good for root crops, celery and other late market-garden crops. There will be no apples; cranberries are a fair crop.

Seekonk (JOHN W. PECK). — Indian corn is a very good crop, but is not much grown in this section. Rowen is fully up to the average, but dry weather has made feed in pastures poor. Less than the usual amount of fall seeding has been done, owing to drought. Onions are generally a very good crop. Potatoes are a good crop in both quantity and quality. Celery seems to have suffered from blight. Pears plenty; apples, peaches and grapes not up to last year.

Swansea (F. G. ARNOLD). — Corn is fully up to the average on dry land, but is below on wet land. Rowen and fall feed have been unusually good until the dry weather of the present month. About the usual amount of fall seeding has been done, but much of it has not germinated as yet, owing to dry weather. Blight struck onions, and the crop is light. Potatoes are above the normal in yield, and of very good quality. The present prospect is for light crops of roots, celery and other late market-garden crops, as we have had a very dry September. Apples light; pears and peaches fair; grapes good; cranberries not grown.

Westport (ALBERT S. SHERMAN). — Indian corn is very good, better than an average crop. Rowen is good, but fall feed has been pinched by dry weather. Fall seeding has been done later than usual, and some farmers have not yet finished. There is a fair crop of onions, about normal. Potatoes are a fair yield, but are generally rather small. Turnips and cabbages are backward, and will not be a large crop. Apples are about half a crop; pears plenty; peaches scarce; grapes abundant; no cranberries grown here.

Dartmouth (L. T. DAVIS). — Corn is a little above a normal crop. Rowen and fall feed are hardly up to the usual average. Not as much fall seeding has been done as in some years, and it has been too dry for its best progress. Onions are little raised. Potatoes are hardly up to the normal in yield, but are of fair quality. The prospect is fairly good for root crops, celery and other late market-garden crops. What few apples there were have fallen badly, so that there is a very poor crop; pears much the same. Some late planted forage crops have done very well, and are still growing.

Acushnet (M. S. DOUGLAS). — Indian corn is more than a normal crop. The rowen crop and fall feed are up to the usual average. Less than the usual amount of fall seeding has been done, and it is not promising. There is a fair crop of onions. Potatoes made a good yield, but have rotted badly. There is a good prospect for root crops, celery and other late market-garden crops. There are few apples; pears not up to the average; few peaches and grapes; cranberries big crop.

PLYMOUTH COUNTY.

Norwell (HENRY A. TURNER). — Indian corn is a good crop. Rowen has been plentiful, and of excellent quality. There is about half a crop of onions, they having blighted badly. Potatoes are a very good crop,

both in yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Few apples, pears and peaches; native grapes abundant.

Hanover (Harrison L. House). — Corn is a full normal crop. Rowen and fall feed are fully up to the normal. The usual amount of fall seeding has been done, and it is in good condition. Onions are not raised here. Potatoes are a short crop, but of good quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are scarce; pears fair; peaches very few; grapes a failure; cranberries good.

Marshfield (John H. Bourne). — Indian corn is 10 per cent above the normal. Rowen and fall feed are much above the usual average. Not quite as much fall seeding has been done as usual, and it is a little backward, owing to the four weeks of dry weather. Onions are not quite as large as usual, but they have ripened off well. Early potatoes have made a larger yield than usual, and are above average in quality. The long dry spell checked the growth of root crops, celery and other late market-garden crops, but they are now growing again. Apples are less than an average crop, and variable, some trees loaded, and others near by with none; pears a full average; few peaches; grapes abundant; cranberries a fuller crop than last year.

Pembroke (Nathaniel Morton). — The corn crop is small in quantity, and about medium in quality. Rowen is very good, and fall feed about as usual. The usual amount of fall seeding has been done, and it is in normal condition. Onions are a very good crop. Potatoes are a very good crop in both yield and quality. The prospect is good for root crops, celery and other late market-garden crops. Apples are scarce; pears abundant; peaches none; grapes abundant; cranberries an average crop.

West Bridgewater (Clinton T. Howard). — Corn is more than a normal crop. Rowen and fall feed are better than an average crop. More than the usual amount of fall seeding has been done, and it has made a good start. An average crop of onions is being harvested. Potatoes are of good quality, and three-fourths of a normal crop in yield. There is a light crop of roots, celery and other late market-garden crops, perhaps a three-fourths yield. Fruits of all kinds will give light yield, perhaps not over a fourth of the normal.

Kingston (George L. Churchill). — Indian corn is a very good crop, better than usual. Rowen and fall feed are up to the usual average. Not much fall seeding has been done in this vicinity as yet. Onions are not much raised. The potato crop is very fair so far as harvested. Root crops, celery and other late market-garden crops are not much raised about here. There will be a good crop of cranberries and a small crop of apples.

Carver (J. A. Vaughan). — Rowen and fall feed are up to the usual average. The usual amount of fall seeding has been done, and it is

in good condition. No onions are raised here. Potatoes are a small yield, of good quality. The prospect is good for root crops, celery and other late market-garden crops. But few apples will be harvested, and no peaches. About two-thirds of the cranberry crop has been gathered, and an average crop of berries of the best quality is assured.

Lakeville (Nathaniel G. Staples). — Indian corn is not more than an average crop. Rowen and fall feed are up to the usual average. About the usual amount of fall seeding has been done, but it does not look very well as yet, owing to dry weather. Onions are not up to the normal. There will not be more than three-fourths of a normal crop of potatoes, but they are of good quality. Early sown turnips were hurt by drought, late sown better; other root crops fair. There is about an average crop of fruit of all kinds.

Rochester (Geo. H. Randall). — Corn is better than an average crop. Early mown meadows had a large crop of rowen, while late mown ones gave a small crop. About the usual amount of fall seeding has been done, and it is looking finely. There is the smallest crop of onions for many years. Potatoes are about half a crop, but of good quality. The prospect is generally good for root crops, celery and other late market-garden crops, though not much celery is grown. Apples are half a crop; pears and peaches good; grapes light; cranberries good; no frost as yet.

BARNSTABLE COUNTY.

Bourne (David D. Nye). — Indian corn compares favorably with a normal crop. Rowen and fall feed are up to the usual average. Very little fall seeding, if any, has been done. Scarcely any onions are grown here. Potatoes have made a very good yield, and are of fine quality. Very few root crops or late market-garden crops are grown. Apples poor; pears cracking badly; peaches scarce; few grapes; cranberries about average.

Falmouth (D. R. Wicks). — Indian corn and sweet corn are fully up to the normal. Rowen and fall feed are above the usual average. Not much fall seeding has been done this fall. Onions have blighted very badly on most fields. Potatoes compare well with the average in yield and quality, but show some rot. Root crops are doing fairly well, especially turnips. Apples are plenty on most orchards; pears poor; peaches few; grapes good; cranberries plenty.

Mashpee (W. F. Hammond). — The crop of Indian corn is above the average. The rowen crop and fall feed are about average. There has been the usual amount of fall seeding done, and it looks well. The onion crop is below the average. Potatoes are below the average in yield and quality. All root crops are about average. Apples, pears, peaches, grapes and cranberries are about half crops.

Barnstable (John Bursley). — Indian corn is 85 per cent of a normal crop. Rowen and fall feed are up to the usual average. The usual

amount of fall seeding has been done, and that sown early looks very poorly; recent seeding may do a little better, as rain has just fallen. There is a very good crop of onions. Potatoes are a three-fourths crop in yield, but of good quality. Cape turnips suffered for want of rain, but the showers of the 22d may help out somewhat. Apples light; pears, peaches, grapes and cranberries very good. Probably three-fourths of the cranberry crop has been harvested without any frost; crop very large in this locality.

Dennis (Joshua Crowell). — Corn is fully up to the usual average. Rowen and fall feed are not up to the usual average. Very little fall seeding has been done. Onions are below a normal crop. Potatoes compare favorably with the normal in both yield and quality. The prospect is fair for root crops, celery and other late market-garden crops. Apples are half a crop; cranberries about average.

Harwich (Ambrose N. Doane). — Indian corn is a very good crop. The dry weather damaged rowen and fall feed very much. Very little fall seeding is done here. Onions are a fair crop. Potatoes are of good size but make a small yield. The prospect is about average for root crops, celery and other late market-garden crops. Apples fair; pears, peaches and grapes poor; cranberries fair.

Eastham (J. A. Clark). — Indian corn is an average crop. Rowen and fall feed are below the usual average, owing to drought. Less than the usual amount of fall seeding has been done, as the ground has been too dry. Potatoes are a very good crop. The prospect for root crops, celery and other late market-garden crops has improved since the rain. Apples and cranberries average.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Indian corn is an average crop. Rowen and fall feed are below the usual average. Very little fall seeding is done here. Onions are less than an average crop. Potatoes are of good quality, but below average in yield. The prospect is good for root crops, celery and other late market-garden crops. Apples, pears and grapes are below the average in yield.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

CRANBERRY CULTURE.

By LUCIAN J. FOSDICK, *Author "French Blood in America."*

The cultivation of cranberries began during the nineteenth century, becoming an extensive industry in New England, New Jersey and Wisconsin during the last thirty years; and it has become the leading industry on Cape Cod, the soil there being particularly adapted to their growth.

Few people appreciate, while enjoying their Thanksgiving dinner, how much time, labor and money were spent in obtaining that small but important part of the feast, — the cranberry sauce.

Until of recent date cranberries were considered a luxury, but to-day they have become a staple necessity, and there is an ever-widening market for them.

The berry derived its name from the appearance of the flower, because, just before expanding into the perfect flower, the stem, calyx and petals resemble the neck, head and bill of the crane. Hence the name, "craneberry," which usage has shortened into the familiar "cranberry." The sub-family name, Oxycoccus, is derived from Oxus, — sharp, or acid, and Kokkus, — a berry.

Cranberries have been known to northern Europe for centuries, and are grown in Russia, Sweden and Great Britain. The berry is a native of Russia, Siberia, South America and North America. Its normal latitude for cultivation is 39° to 42° north.

The cranberry known as the "Large American Cranberry" is superior to any known varieties, and is highly cultivated in New England, New York, New Jersey, Michigan, Wisconsin, Minnesota and the Pacific coast States.

Cranberries were first cultivated on Cape Cod, Massachusetts, nearly a century ago; and of late years the harvested crop has netted the

growers of the Commonwealth from one million to one and a half million dollars per annum.

According to statistics, cranberry culture occupies about 20,000 acres in the United States. The chief districts are located in Massachusetts, New Jersey and Wisconsin, but the northwest coast line of Oregon and Washington promises to become a great field for this agricultural industry.

There is a constantly increasing market for this fruit in the United States, and, without doubt, in the near future cranberries will be exported in larger quantities. The acidity of the fruit is especially healthful, particularly for people living in warm climates.

Land. — The land upon which the cranberry is cultivated is reclaimed swamps and bogs, which have formerly been considered of but little value. The right kind of soil is low, moist land, suitably drained, consisting of peat, muck and mould, or decayed vegetation, classified as alluvial deposit. Clay soil is unfit for the cranberry, and loam will grow weeds too readily. Brown or brush bog is best, because less labor is required to bring it to a state of cultivation, and this kind of bog land is usually free from grass roots. If wooded swamp land is used, trees should be cut at the roots, to tip out the stumps in felling, which can be burned or removed from the bog. Boulders will do no harm on a cranberry bog, but they take up room.

We prefer a bog open to the sunshine and winds, to one surrounded by high banks, as it is less liable to sun-scald and frost.

Sand. — Clear, sharp sand or gravel, free from clay or loam, is required, with which to cover the bog before setting vines.

Turfing. — After the removal of brush and trees, the surface of the bog should be turfed by cutting, with a turf axe, into pieces 12 by 18 inches, and then with a pulling hook the turf should be turned upside down. If there are bunches or tussocks they should be removed from the bog, also all coarse roots of trees and brush; but the turf should not be taken off, as it is the best feeder of the cranberry vine, being superior to muck, for it is not so cold and wet, and is more spongy. The turf should be cut with a turf hoe after it has been turned over, and the high places should be levelled.

Drainage. — Good drainage must be obtained, else during the growing season the berries will rot and sun-scald badly. To obtain good drainage, the bog should be ditched in sections adapted to its size and shape, six to twelve sections to the acre being the average. A shore ditch should be cut entirely around the bog. This is needed for two reasons: first, to cut off any underground water courses; and, second, to prevent upland growth encroaching on the bog. If the bog is sufficiently wide, a central ditch for the flow of water is desirable. The central ditch should be 4 feet wide, and of sufficient depth to carry the water from 12 to 18 inches below the surface of the bog. The shore and cross ditches should be cut 3 feet wide, and of sufficient depth to give

proper drainage. After ditching, the sections should be graded and slightly crowned at the centre, and the material thrown out in ditching may be used to fill up holes, and to make the proper levels.

Water. — A good water supply is essential to the successful cultivation of the cranberry. The supply may be obtained from a pond, reservoir or running brook, but must be under full control at all seasons of the year.

Stop-waters. — Stop-waters, or gates, in the brook and ditches will enable the grower to keep the water at the desired level, which should be varied according to the time and season. Early in the season 4 to 8 inches from the level of the bog, and later 10 to 15 inches, is a good average.

Sanding. — The next process in the preparation of a cranberry meadow is to cover the sections with clear, sharp sand or gravel, to the depth of 3 to 6 inches, 6 inches being none too much on the portions of the bog that are inclined to be soft and wet. The sand or gravel must be free from clay or loam. Sand will make a cold bog warm, and it will retain water while the surface is dry. It also retains the heat of the sun, causing the bog to be less liable to be affected by frosts and sun-scald than bogs not sanded. Sand also retards the growth of weeds, and affords the cranberry vine a better opportunity for growing.

When selecting bog lands to build into cranberry meadow, don't purchase when it is covered with snow or under water, unless you are familiar with the tract. Know the nature and condition of the land, and see that no one has a right of water flowage above or below your bog.

Vine Setting. — We are now ready to set out our cranberry vines. Care should be taken in the selection of varieties, there being over two hundred known varieties at the present time, all of which have not been cultivated sufficiently long to warrant their selection to any large extent. Vines which yield large crops of good-sized berries, of uniform dark color, are the ones to cultivate.

The "Early Black" is probably the most extensively cultivated. It is pear-shaped, a prolific cropper, will keep well if picked before too ripe, and will color well after picking.

The "McFarlin" is a native of Carver, Mass., a round, large berry, ripening medium early, coloring uniformly. It is a good cropper, and a good keeper when picked at the proper time.

The "Centerville" is a handsome, long berry, takes a high color, crops well, and can be harvested late. These three varieties, ripening successively, can be handled readily at harvest time.

Marked Varieties. — The marked varieties are distinguished in shape as pear, pointed, bugle, oval and round. Berries vary in the time of ripening, also in keeping qualities. Some berries will color well after they are picked, while others will not change from white to red unless left upon the vines to ripen. The cranberry is first green, then white,

then it turns to pink, then red; and some varieties, when ripe, are so dark a red as to be almost black.

Vines should be set out evenly, to produce an even and regular growth; and, to accomplish this, a marker is used, made like a rake with five or more teeth, set 12 to 18 inches apart. This is dragged at right angles across the sanded bog. No care is needed to set the vines right side up; they will grow as readily one way as the other. Two inches above the sand is sufficient. More than three vines in a hill are liable to heat; and if they all thrive, the vines are too thick in the hills where over three are set. Hills should be 12 to 18 inches apart. Where the lines cross each other those that were made by the marker will indicate where to set the vines. The dibble is used in setting, to press the vines down through the sand into the soil beneath, leaving the vines just above the surface. Vines which do well will bear the second year, the third year a good crop may be expected, and the fourth year a full crop. With proper cultivation, they will do well for many years.

Cultivation. — Thorough weeding the first three or four years will assure a fairly clean bog. Brakes, ferns and rushes will grow readily in ditches and on the ditch banks, and should be dug out by the roots. If this part of the cultivation is neglected, they will grow so rank as to prevent the vines from bearing, and what few berries there may be on the ditch banks will be soft or green at harvesting. When the meadow is in bearing condition, all weeds should be removed by the time the vines are in bloom. On Cape Cod the blooming season is usually from June 10 to 25, unless winter flowage is continued late.

Walking over the meadow, after the berries have set, will destroy more or less of the fruit, and the weeding from this time to harvesting should be discontinued, removing only such weeds as may be reached by walking in the ditches.

Irrigation. — This is very essential to the successful cultivation of the cranberry. Too much or too little water are both difficulties to be avoided; or, in other words, water must be under control of the cranberry grower. The vine roots should be well fed with water up to the blooming period, but when the berries are formed the water should be kept lower.

Cranberry vines are fond of running water, and if the water supply is limited, the brook and ditches may be flushed out during a rain. Gravitation is the cheapest method of irrigating with water. But sometimes the pond is lower than the bog. In these cases a steam pump or windmill will overcome the difficulty.

Dikes. — In laying out cranberry meadows, in many instances it is necessary to build dikes. In case a meadow or bog is long, it might be economy to build a roadway dike across it, thus saving time and labor, and also by the same means reducing the depth of water to be carried at the time of flowing. This will be the case if the meadow has much of a fall. Providing the meadow is long, and has a fall of 5 feet, to

cover properly the highest point of the bog, 7 feet of water will be required at the lower dike, so that this lower dike will need to be 9 feet high. By building one or more midway dikes, the volume of water may be reduced very materially, which is desirable for quick flowage and rapid drainage.

If dikes are to be built, they should have a broad base, below the center of which a 3-foot trench should be dug to hardpan. This trench runs lengthwise of the dike, and is filled with sand or gravel. The width at the bottom of the dike depends upon the depth of water to be carried in the pond or on the meadow at the time of flowage.

When the dike is to be used as a drive or roadway, the height will determine its width at the top. A dike 4 feet high, when constructed for this purpose, should be 14 feet wide at the top, and at least 18 feet wide at the base. No heavy team should be allowed to drive over it for at least six months after it is built, and then the wagon should have wide tires.

A dike should be built amply strong to withstand the pressure of water which it is intended to carry; and, if it is to be a reservoir dike, sand should be dumped off its bank on the reservoir or water side, to completely cover the turf. This sand covering will keep muskrats from burrowing into the dike, as the sand fills in wherever they try to burrow. The reservoir dike should be built at least 2 feet higher than high-water mark, for strong winds will cause the water to wash and slap against it. The outlet must be ample to admit of overflow in case of heavy rains and melting snow. Pulling plank should be set at the reservoir flume at the height water is to be carried.

The outside of all dikes should be built up with turf cut 12 by 18 inches, and some 12 by 24 for binders. All turf should be laid longest way crosswise on the dike, and all seams lapped, after the manner of laying bricks.

If the water is 6 feet deep at the flume, the dike should be not less than 8 feet high, 18 feet wide at the base, and narrowed to 10 feet at the top. This will allow 4 feet for the sloping of each side, which is none too much, even when good, tough turf is used for its banks.

When a dike crosses a meadow, no ditch should be dug nearer than 10 feet to its sides, else the great weight of the dike will crowd, and fill up the ditch, causing the dike itself to slump and cave. A crushed down dike is an eyesore, and little better than no dike for holding back water. If the dike crosses soft land, such as muck or mud, it should be spiled to hardpan lengthwise, in addition to the center filled trench. A thoroughly built dike will pay in the long run.

The flume through the dike must be carefully and strongly built. Some are built with stone, others with plank; but we prefer the Portland cement flume, built with a bulkhead so water can be handled at the top rather than from the bottom of the flume. An experienced man will be profitable to employ for this part of the work.

The Reservoir. — A pond or reservoir at the head of a cranberry meadow is of great value, to hold a reserve water supply for irrigation purposes during the dry months of summer, and also to enable the grower to flood his meadows when occasion requires.

Harvesting. — The best method of harvesting or picking cranberries is problematical, and must be determined by the individual grower. Hand picking and raking were the original methods, and hand picking is still adhered to by many growers. On large bogs machine picking solves the problem of securing the crop during the harvest season, which on Cape Cod usually begins the last of August and continues into October.

Overripe berries will not keep well, and it is a mistake to pick the fruit when green, for, if marketed, it will bring a low price. If only good, high-colored, sound berries are marketed, the returns will be more satisfactory to the grower.

When the bog is to be picked by hand, a margin around the section is picked first, usually by men and boys, in the morning before the bog dries off sufficiently for regular picking. This is called ditch-row picking. These berries will be picked while the vines are wet with the morning dew, and only a few of them should be put into each picking box; when the berries are dry, the boxes may be filled up. Care must be taken to have the berries dry when packed in the storehouse, to insure their keeping qualities. Regular picking does not begin until the vines are dry.

After the margin is picked, the section is ready to be lined off. This, is done with a reel and line, two garden lines and a 3-inch ring. The men who line out the sections walk only on the margin, — which has previously been picked.

To harvest a 10-acre bog, yielding an average crop, about 50 hands are needed, besides a foreman, 2 men helpers, a tally keeper and a dumper.

Cranberries should be stored, dry, in a slatted bushel crate, with cleats on each end, to insure good keeping qualities previous to their being marketed; and while in the storehouse they should receive ventilation, but not be subject to draughts.

Where native help is scarce, bunk houses are built to accommodate the pickers during the harvesting season.

Bunk House. — Dimensions, 16 by 40 feet, with a partition through the center, so that one chimney is sufficient for the two apartments. In the extreme ends, in the center, are built two tiers of four bunks each, separated by matched board partitions. Each bunk is 4 feet wide, and is supposed to accommodate two persons. The space above the bunks is floored over with matched boards. The boys occupy the loft in one end of the bunk house, and the girls the loft in the opposite end. A bunk house arranged on this plan will easily accommodate 60 to 75 men, women and children.

Screen House. — A building with ample capacity for packing boxes, barrels, the harvested crop, and room to clean and pack berries, is essential. A dry, properly ventilated cellar in this building is especially desirable, in which to store the harvested berries previous to packing and shipping to market.

Turkey strutting in the lane,
  Thinks he's very fine;
Cranberries gleaming in the sun,
  How like rubies shine.
Mince pies sitting in a row.
  Oysters from the bay;
What a glorious feast we'll have
  On Thanksgiving Day.

Fall Work. — Previous to the ground freezing up for winter, all weeds should be removed from the bog; dikes and flumes should be examined, to see that all is secure before the bog is flowed.

A rank growth of vines will not yield a good crop of berries, and what there are will be late in ripening, and subject to rot if the season is hot and wet. Under these conditions it is well to resand the vines with 1 to 2 inches of sand. Vine sanding is done on the same principle as the sanding of new bog, with one exception. Instead of dumping the sand on the bog, each wheeler brings his shovel on the wheelbarrow load, and spreads the sand from his barrow. To accomplish this a plank runway is laid from the sand pit to the bog. Upon this runway men with wheelbarrows bring the sand as directed by the foreman, who attends to moving the runway as the sanding progresses. Sanding is often done after ice forms on the bog. The only objections to this are, that the vines needing sand cannot be so readily seen, and sometimes when ice breaks up it drifts with the sand on it, carrying it to parts of the bog where it is not needed, thus distributing the sand unevenly.

Winter Flowage. — For the protection of cranberry vines during the cold months, flowage should take place just prior to the freezing up of the ground. This prevents winter-killing of vines, which is liable to occur during severe winters, the same as grass will winter-kill. It also prevents the throwing of vines by the action of freezing and thawing.

Should any portion of the bog be less than 12 inches under water, it will be well to keep a sharp lookout to the outlets after the ice forms, and prevent any lifting of the ice by heavy rains or sudden thaws, which will pull the vines, where frozen into the ice.

Late flowing in the spring will retard the growth of the cranberry vine, and thus it can be carried beyond the usual frost-killing season. Water is kept on by some growers on the Cape until early summer, to avoid the late spring frosts; but this will shorten the growing season, and cause the berries to ripen late in the fall. Seasons will vary, but on Cape Cod from the last of November to the last of April is a good average period for bog flowing.

When there is an ample supply of water, the grower, to kill off injurious insects, will resort to a twenty-four hours' flowing of his bog during a rain or cloudy weather, as the sun will scald berries that are under water. If a bog is seriously infested with worms or insects, to the destruction of the fruit crop, it may be desirable to flood the meadow all summer, and sacrifice one season's crop.

March winds are injurious to cranberry vines, as this is usually a thawing and freezing month, and a covering of water will protect them.

A fruit crop is sometimes saved from fall frosts by flowing. This can be done when there is an ample supply of water and good drainage. Water must be handled quickly, in order that the meadow may be dry at time of picking; also, to prevent the berries from sun-scald.

Drawing Off. — When the winter flowage of water is drawn off, a rainy spell should be chosen. More or less slime, etc., will form on the bog and vines; and if the water is drawn off during a storm, the rain will wash the vines, and the exposure to the air at this time, minus the sun's rays, is very beneficial.

Packing and Shipping. — The packing season usually begins soon after picking, following soon after the fall fruits are out of the market. Small shipments are made during the picking season, the berries being cleaned and packed in the morning, while the bog is drying off, and also on rainy days.

Berries stored in the storehouse at a cool temperature, if brought to a much warmer temperature in the packing room, will become wet. This is often spoken of as the sweating process, which term is hardly correct, for the cranberry skin is waterproof. To demonstrate this fact, submerge cranberries in water for days, and they will be as fresh as when picked. When berries are wet, under the conditions mentioned, it is due to the process of condensation. Berries should never be packed in a wet condition. To avoid this, the packing house should be kept cool, and then, if berries become wet, it is best to discontinue packing until the atmosphere becomes cool and dry.

Berries are poured from the picking or storage boxes into the hopper of the separator, which blows out the vines and separates the greater part of the poor from the good berries. From the separator the berries go to the screens, and are carefully picked over by women, four or five usually working at a screen.

The shipping package has been, to a great extent, the 100-quart barrel, but the two-compartment crate (holding 32 quarts, dry measure) is the proper shipping package for cranberries. In fact, many of the commission houses manifest their preference for the crate package by re-packing from barrels into crates. The crate package will keep the berries in the best possible condition, it is easily handled, and it requires for equal holding capacity less storage room than a barrel.

Cooking. — As cranberries contain such acute acids, there is no fruit that will so quickly act upon tin, iron or brass, when brought into con-

tact. Hence, always cook cranberries in earthen-lined kettles, granite, agate ware, or, still better, in aluminum kettles, which are now reasonable in price, are light to handle, will not tarnish or discolor the sauce, and do not easily scorch it. Never allow any article of food containing cranberries to stand in anything but earthen or glass dishes. Granulated sugar should always be used, as the poorer qualities of sugar and molasses destroy the flavor of this delectable berry.

God bless the man who sows the wheat,
Who finds us milk, and fruit, and meat;
May his purse be heavy, his heart be light,
His cattle, and corn, and all go right.
God bless the seeds his hands let fall,
For the farmer, he must feed them all.

Estimated Cost of building Cranberry Meadow.

Cost per acre for land,	$10 00
Turfing, grading, ditching and sanding,	200 00
Six barrels vines, at $5 per barrel,	30 00
Setting out of vines,	16 00
	$256 00

Nothing is allowed in this estimate for tools, building of dikes, flumes, roadways, or for buildings. The cost will to a great extent depend on the conditions which exist naturally, the manner in which the bog is built, and the foreman having charge of the building of the bog. The estimate given is based upon labor at $1.50 per day of 9 hours.

It is not unreasonable to expect that a good piece of bog, properly built and vined with good varieties, receiving proper care, will give an average yearly yield of 60 to 75 barrels of cranberries per acre. Estimates, based upon statistics gathered from many bogs, for a term of years, have been given by a large grower as about 32 barrels per acre.

In the cultivation of cranberries, there are many things which will interest the thoughtful and diligent man. The author has made no attempt to write a glowing account, but his purpose has been to encourage the intelligent cultivation of waste places possessing great fertility, which, under right management, can be made to produce paying crops.

SERIES OF 1906. VOL. 19. NO. 6.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF OCTOBER, 1906.

PEACH CULTURE.

ISSUED MONTHLY, MAY TO OCTOBER, BY STATE BOARD OF AGRICULTURE, STATE HOUSE, BOSTON, MASS.

J. LEWIS ELLSWORTH, *Secretary.*

ENTERED JUNE 3, 1904, AT BOSTON, MASS., AS SECOND-CLASS MATTER, UNDER ACT OF CONGRESS OF JUNE 6, 1900.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
18 POST OFFICE SQUARE.
1906.

Approved by

The State Board of Publication.

Crop Report for the Month of October, 1906.

Office of State Board of Agriculture,
Boston, Mass., Nov. 1, 1906.

Bulletin No. 6, Crop Report for the month of October, is presented as the final issue of the season. We wish to thank our correspondents for their faithful assistance, which has been given freely and without reward, save for the sense of duty done. We trust that they will all be in a position to give us the same help when another growing season shall have reached us.

The special articles printed this year have been: Bulletin No. 1, "The home garden," by Prof. F. W. Rane; Bulletin No. 2, "Some causes affecting the profits of dairying," by Prof. F. S. Cooley; Bulletin No. 3, "Clovers; their value, characteristics of varieties and methods of production," by Prof. Wm. P. Brooks; Bulletin No. 4, "Some practical phases of poultry feeding," by John H. Robinson; and Bulletin No. 5, "Cranberry culture," by Lucian J. Fosdick. We have a limited number of Bulletins 2, 4 and 5 on hand, which we shall be glad to send to any one desiring them. The supply of Bulletins Nos. 1 and 3 is entirely exhausted, but we shall reprint the articles on the home garden and on clovers later, and any requests for the same will be placed on file and filled as soon as possible.

Particular attention is called to the article at the close of this bulletin, on "Peach culture," by Prof. F. A. Waugh, professor of horticulture at the Massachusetts Agricultural College. It was originally intended to have an article on stone fruits in this bulletin, but Professor Waugh felt that there was enough interest in peach growing and enough subject-matter to make it the basis for a separate article. Professor Waugh has given this subject a great deal of attention during his residence in New England, and is certainly a well-recognized authority upon all matters of horticulture.

Progress of the Season.

The Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture (Crop Reporter for October, 1906) finds the condition of corn on October 1 to have been 90.1, as compared with 90.2 a month earlier, 89.2 in 1905, 83.9 the year previous, and a ten-year average of 79.6.

The preliminary estimate of the average yield per acre of spring wheat was 13.7 bushels. The average quality October 1 was 88.5, as compared with 89 in 1905 and 75.7 in 1904.

The preliminary returns indicate an oat crop of about 863,352,000 bushels, or an average of 31.2 bushels per acre, as compared with 34 bushels in 1905, 32.1 bushels in 1904, and a ten-year average of 29.6 bushels. Average quality 88.2, against 92.4 in 1905 and 91.4 in 1904.

The preliminary estimate of the yield per acre of barley is 28.3 bushels, against 26.8 bushels in 1905, 27.2 bushels in 1904, and a ten-year average of 25.1 bushels. Average quality 88.2, against 92.4 in 1905 and 91.4 in 1904.

The preliminary estimate of the yield per acre of rye is 17 bushels, against 16.5 bushels as finally estimated in 1905, 15.2 bushels in 1904, and a ten-year average of 15.4 bushels. Average quality 94.1, against 92.6 in 1905 and 91.6 in 1904.

The average condition of buckwheat on October 1 was 84.9, as compared with 91.2 a month earlier, 91.6 in 1905, 88.7 in 1904, and a ten-year average of 83.

The average condition of tobacco on October 1 was 84.6, as compared with 86.2 a month earlier, 85.8 in 1905, 85.6 in 1904, and a five-year average of 80.2.

The average condition of potatoes on October 1 was 82.2, as compared with 85.3 a month earlier, 74.3 in 1905, 89.5 in 1904, and a ten-year average of 74.7.

In Massachusetts the average condition of corn October 1 was 95; the average yield of oats 34 bushels, and the quality 91; the average yield of rye 15 bushels, and the quality 93; the average condition of buckwheat 82; the average condition of tobacco 97; the average condition of potatoes 76;

the average production of beans compared with a full crop 82; the average production of asparagus 22; the average production of cabbages 89; the average production of onions 82; the average production of tomatoes 89; the average condition of apples 62; the average condition of grapes 86; the average condition of cranberries 73; and the average production of watermelons 78.

Massachusetts Weather, 1906.

[Furnished by Weather Bureau, Boston.]

The weather of January was generally unseasonable, with few storms and high temperatures throughout the month. The mild weather caused buds to start, and ice disappeared on streams. The greater part of the precipitation occurred as rain, and was fairly well distributed over the month. The snowfall was light, and at the close of the month there was little on the ground.

February weather was less severe than the normal. On the 9th there was a general and quite heavy snowfall, except on the immediate coast, where rain fell. The month closed with a storm of moderate energy, both rain and snow fell, followed by a decided fall in temperature, with high winds and gales.

March was unseasonably cold as a whole, the temperature ranging at or near zero to an unusually late date. The snowfall was greatly in excess of the March average, generally exceeding the fall of the preceding three months. After the 26th the temperature was decidedly higher, and the snow rapidly disappeared, with rain on the closing days of the month.

April was a seasonable month, no marked departures from the normals occurring in any of the elements. The precipitation was well distributed through the period and over the State. The month as a whole was pleasant, and the season near the average at its close.

May was characterized with much pleasant weather, there being an average of thirteen clear days, eleven days when the sky was partially obscured, and but ten days without sunshine. The total rainfall was, however, considerably in ex-

cess of the normal, more than half the monthly amount occurring in the storm of the 27th and 28th. The mean temperature of the month shows the weather to have been somewhat warmer than the seasonal average, contrary to popular opinion. Severe local storms were less frequent than usual during the month.

During the first part of June the rainfall was copious, though not excessive and somewhat unevenly distributed. The temperatures were near the seasonal average. From the 11th to the 18th there was generally fair weather, with abundant sunshine and a general tendency to moderately cooler weather. During the closing decade the rainfall was light and irregular in distribution, and with no marked rise in temperature. The local storms were less violent than usual during the month. The month as a whole was quite pleasant, but at its close the season was a week or ten days late.

The opening days of July were generally cloudy, with scattered showers and occasional local storms, and generally low temperature for the season. From the 5th to the 16th generally fair weather prevailed, with temperatures near the normal. On the 17th, 18th and 21st scattered showers occurred, but the rainfall was light. The humidity and high temperatures at this period produced unusually oppressive and trying weather conditions. For the remainder of the month the weather was very unsettled, with almost daily showers. July, as a whole, was an unpleasant month for the midsummer season.

During the first twelve days of August cloudy weather prevailed, with frequent showers and thunderstorms. The humidity was also high during this period. From the 12th to the 20th clear weather prevailed, with normal temperatures, except on the 18th and 19th, when the maximas were extremely high. The weather was cloudy from the 20th to the 23d, with high temperature and humidity, resulting in a number of severe thunderstorms. The remainder of the month was clear, cool and pleasant. The rainfall of the month was very unevenly distributed. There was an average amount of sunshine.

September opened with several days of rather cool weather. Light showers occurred on the 3d, but from that date to the 12th there was almost an entire absence of rain. The temperatures during this period were generally in excess of the average. There were light showers on the 13th and 14th, followed by fair weather, with seasonal temperatures, till the 19th. The 18th and 19th were very warm days. Copious rains fell on the 20th to 23d, inclusive. There was a cool wave on the 24th to 26th, with light frosts in some sections. As a whole, the month was very pleasant, and characteristic of the season.

Weather for October.

The weather of October was generally characteristic of the season. The month opened with several days of fair weather, with temperatures somewhat below the average, and the first rain, moderate showers, occurred on the 6th. During the 9th and morning of the 10th a general storm passed over the State that caused moderate to copious and excessive rains in all sections. In some sections it was attended by high winds. The much-needed rain was very beneficial, thoroughly wetting the dry soil and filling streams and ponds. In some localities more or less damage resulted from the overflowing of streams, washing of roads and fields and the flooding of cellars. A spell of fair and generally sunny weather obtained from the 11th to the 19th, inclusive. During this period the temperatures were somewhat below the seasonal average, falling to freezing or below in many sections on the 12th and 13th. Moderate rains were prevalent on the 20th and 21st, followed by several days of generally fair weather. The month closed with rains on the 30th and 31st, with low temperatures. From the 18th to the 28th the weather was very mild, with the daily mean temperatures ranging from 1° to 10° above the seasonal average. October, as a whole, was an exceptionally pleasant month, with the monthly temperature slightly below the normal and a substantial deficiency in the rainfall.

Crops of the Year.

The weather of May was cold but pleasant, with frosts on the mornings of the 20th and 21st, which did considerable damage to early vegetables. Pastures and mowings wintered very well, but owing to cold weather grass started slowly, and later its growth was checked by drought. There was a good bloom of apples, but pears, plums, cherries and peaches showed a rather light bloom. Small fruits and berries generally bloomed full. Little damage from frost was reported. Few insects appeared and did little damage. Planting was somewhat backward, due largely to the late opening of the season and cold weather. Farm help was unusually scarce; average wages, $20 per month with board, and $1.50 per day without board. There was a slight increase in the acreage of corn, potatoes, tobacco and onions, and a new cranberry bog was reported as being made.

Insects were unusually prevalent in June, but not doing excessive damage. Indian corn was late, but of good stand and color. Haying had hardly begun at the close of the month, and a good crop was generally expected. The acreage of forage crops showed no special increase. Early potatoes were somewhat later than usual, but looking well. Early market-garden crops were later than usual, with prices higher than for some years. The flow of milk was well maintained, but prices for butter and butter fat were lower than the year previous. Dairy cows were in fairly good supply, with easier prices. Pastures were in first-class condition. Strawberries were a good crop; cherries light; plums and pears promised to be light; peaches fairly good; apples promised well.

Potato bugs were reported as more numerous than usual in July and harder to keep in subjection. Indian corn was a little backward, but making luxuriant growth. Haying was not completed, but the crop was considerably above the average. The acreage of forage crops was not increased, and all were in excellent condition. Market-garden crops were yielding well, with prices a little above normal. Potatoes promised well, though few had been dug. Apples prom-

ised only a light crop; pears and plums light; peaches fair in most sections; quinces good; grapes and cranberries promised well. Pastures were green and growing, with abundant feed. Oats rusted badly; rye good; barley grown only for forage.

Indian corn came forward rapidly during August and promised a very fine crop. Sweet corn is extensively grown in eastern sections for the market, and in all sections as a late forage crop. Rowen promised to be an unusually heavy crop. Late potatoes were generally suffering from blight. There was a slight increase in the acreage of tobacco, and an excellent crop. Pastures were in unusually good condition. Apples promised only a very small crop; pears also light; peaches light, but better than usual; grapes set unusually full, and developing well; cranberries promised a very good crop. Oats were a heavy crop, though suffering from rust; barley good as a late forage crop.

At the close of September the corn crop appeared to be a bumper one, and to have been secured practically without damage from frost or rain. The rowen crop was a little above the normal in general, and in the main was secured in good condition. Feed in pastures suffered from drought. Much less than the usual amount of fall seeding was done, owing to dry weather, and that put in came forward very slowly. Onions were considerably less than a normal crop, having blighted badly. Potatoes gave a better crop than was expected, but still considerably below the normal. Root crops suffered somewhat from drought, and celery suffered severely from the same cause. Late market-garden crops generally promised light yields. Apples dropped badly, and the crop will be very light; pears a fair crop; peaches did not yield as well as was expected; grapes show considerable rot and mildew; cranberries promised a good average crop, generally secured in good condition.

In the circular to correspondents returnable October 23 the following questions were asked: —

1. What is the value of the corn crop as compared with a normal crop?

2. Have root crops proved to be normal crops?

3. What is the condition of farm stock?

4. What is the condition of fall seeding?

5. How have prices for crops raised for market compared with former years?

6. Which of the leading crops in your locality do you think have been most profitable?

7. Which of the leading crops in your locality do you think have been least profitable?

8. Considered as a whole, has the season been a profitable one for your farmers?

Returns were received from 146 correspondents, from which the following summary has been made: —

Value of the Corn Crop.

The corn crop was considerably above the normal in value, both for grain and stover. Fully up to the normal at the first of September, the warm, dry weather at and after harvesting time was especially favorable to the ripening and securing of the crop. Seldom, if ever, has there been a better crop for grain, and the stover ripened and cured bright and clean, so as to form excellent roughage for winter feed. Where the crop is used for the silo it was secured in prime condition, with no damage from frost.

Root Crops.

Root crops are probably a little below the average, owing to drought during the latter part of August and the first of September. Where raised for market they have generally brought good prices. Potatoes did not rot as badly as was expected, and a fair crop has been secured in most sections, with good prices prevailing to date of making returns.

Farm Stock.

Pastures held out well throughout the year, and stock accordingly goes to the barns in good flesh and health, both milch cows and dry stock. The flow of milk appears to be well maintained. Fall feed in mowings will be light, owing

to late cutting of rowen, and the practice is not being followed to as great an extent as formerly, the opinion prevailing that it is not especially good for the stock and a positive injury to the mowings.

Fall Seeding.

Considerably less than the usual amount of fall seeding has been done than usual, owing to dry weather. That put in early is generally reported as doing well, though a little backward, but the late sown is much in need of rain and a period of warm, growing weather.

Prices.

Prices for crops raised for market, as indicated by the returns, range rather higher than in former years, and this is the more remarkable as there are no shortages in the principal crops, with the exceptions of apples and onions. Of 129 correspondents answering this question 11 speak of prices as lower than usual, 74 as average or about average, and 44 as higher than usual.

Most Profitable Crops.

Sixty-four correspondents, less than a majority, consider hay to have been among the most profitable crops; 51, corn; 24, potatoes; 11, tobacco; 8, apples; 8, tomatoes; 7, cranberries; 6, sweet corn; 4, cabbages; 3, oats; 3, dairy products; 3, forage crops; 3, asparagus; 2, turnips; 2, cucumbers; 2, fruit; 2, celery; 2, strawberries; 1, buckwheat; 1, market-garden crops; 1, peaches; 1, pears; 1, root crops; 1, lettuce; 1, carrots; 1, parsnips; 1, onions; and 1, cauliflower.

Least Profitable Crops.

Sixty-six correspondents report that potatoes are among the least profitable crops; 24, apples; 17, onions; 11, cabbages; 4, corn; 3, hay; 3, squashes; 3, sweet corn; 3, strawberries; 2, buckwheat; 2, barley; 2, celery; 2, beans; 2, peas; 2, cucumbers; 1, pears; 1, oats; 1, grapes; 1, cranberries; 1, turnips; 1, cauliflower; 1, tomatoes; 1, truck crops; and 1, milk.

Profits of the Season.

The season appears to have generally been a profitable one for our farmers. In the main, good crops have been secured, while prices, as above noted, have ruled high. Of the 138 correspondents answering this question, 85 consider the season to have been a profitable one, 21 an average season for profit, 11 that it was fairly profitable, while 12 think it was above the average for profit and 9 that it has not been a profitable one.

NOTES OF CORRESPONDENTS.

(Returned to us October 23.)

BERKSHIRE COUNTY.

Mount Washington (H. M. Weaver). — The corn crop is rather above the average in value. Root crops have proved to be good average crops. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market are from 10 to 15 per cent lower than in former years. Grass has been our most profitable crop. All crops have done very well, except winter apples, which were a complete failure. Considered as a whole, the season has been a profitable one for our farmers.

New Marlborough (E. W. Rhoades). — Indian corn is more than an average crop, and well ripened. Some root crops are smaller than usual. Farm stock is in fine condition. Fall seeding needs more rain before winter sets in. Very good prices have been obtained for market crops. Corn has been our most profitable crop. Considered as a whole, the season has been a profitable one for our farmers.

Monterey (Wm. S. Bidwell). — Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been higher than usual. Cabbage and turnips have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one.

Stockbridge (F. A. Palmer). — Indian corn is a good average crop. Root crops are about 80 per cent of the usual average. Farm stock is in fine condition, pastures having been excellent. Fall seeding is in good condition. Prices for crops raised for market have been better than average. Oats and corn have been our most profitable crops, and potatoes our least profitable one. Most farmers have done unusually well the past season. Farmers ought to keep more sheep to supplement their income.

Windsor (Harry A. Ford). — Indian corn was never a better crop. Root crops are up to the usual average. Farm stock is in general looking finely. Fall seeding was never in better condition. Prices for crops raised for market have been about the same as in former years. Potatoes have been our most profitable crop. No unprofitable crops have been raised. Considered as a whole, the season has been as profitable as usual.

Hancock (B. H. Goodrich). — Indian corn is above the normal.

Root crops are about average. Farm stock is in good condition. But little fall seeding has been done in this section. Prices for crops raised for market have been above the average. Corn and hay have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, the season has been above an average one for profit.

Cheshire (L. J. Northrup). — The corn crop is 25 per cent above the normal. Root crops are above the average. Farm stock is looking about as usual, compared with former years. Fall seeding is in fine condition where sowed early, and the late will come on. Crops have brought good prices. Hay has been the most profitable crop in this section, and potatoes the least profitable. The season as a whole has been a profitable one for all concerned.

Savoy (W. W. Burnett). — Corn is from 20 to 25 per cent better than an average crop. Root crops are full average crops. Fall seeding is in fair condition. Prices for crops raised for market have been fully up to the average of former years. The grass crop always leads in profit, and this year corn comes next. Potatoes have been our least profitable crop, owing to high price of seed, cost of growing and light yield. We call the season on the whole a fair average one for profit.

FRANKLIN COUNTY.

Monroe (David H. Sherman).—Indian corn is an average crop. Root crops are not up to the usual average. Farm stock is in good condition. Fall seeding is in fair condition. Prices for crops raised for market have been above the average. Hay has been our most profitable crop, and apples our least profitable one. Considered as a whole, the season has been about an average one for profit with our farmers.

Hawley (C. C. Fuller). — The corn crop is above the usual average in value. Root crops give good average yields. Fall seeding is looking well. Prices for crops raised for market are better than usual. Apples have been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Leyden (Uriah T. Darling). — The corn crop is more valuable than usual. Root crops have come up to the usual average. Farm stock is looking well. Fall seeding is looking well, considering the dry weather. Prices for crops raised for market have been about the same as in former years. Hay has been our most profitable crop. In some localities potatoes have been our least profitable crop, and in others apples, on account of being very small. Considered as a whole, the season has been a profitable one for our farmers.

Shelburne (Geo. E. Taylor). — Indian corn is an average crop in quantity, quality, and price. Root crops are not up to the usual average. Farm stock is in fine condition. Fall seeding is as good as possible. Prices for crops raised for market have been rather higher than usual, as a whole. Hay and corn have been our most profitable crops.

and potatoes our least profitable one. Considered as a whole, the season has been an average one for our farmers.

Wendell (N. D. Plumb). — The corn crop compares favorably with past years in value. Root crops are up to the usual average. Farm stock is in extra good condition. Fall seeding is the best for years. Prices for crops raised for market have been somewhat higher than usual. Corn, oats, buckwheat and hay have been our most profitable crops, and potatoes our least profitable ones. Considered as a whole, the season has been a profitable one with our farmers, and all seem well satisfied.

Erving (Chas. F. Clark). — The value of the corn crop is greater than usual. Farm stock is in good condition. Fall seeding is not in very good condition. Prices for crops raised for market are up to the usual average. Corn has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Northfield (T. R. Callender). — The corn crop is above normal in value. Root crops are a fair average. Farm stock is in prime condition, young cattle looking well in pasture. Fall seeding is rather late, but is usually an even stand. Prices for crops raised for market are fully up to the usual average. Cucumbers and tobacco have been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been more than an average one for profit. Wells and springs are very low, and heavy rains are needed to prevent a shortage of water this winter.

New Salem (Daniel Ballard). — There is a full average crop of well-ripened Indian corn. Root crops have been about average in yield. Farm stock is looking well, and is in good average condition. Fall seeding is looking fairly well, but the weather has been rather dry for some fields. Good prices have been maintained for crops raised for market. Hay has been our most profitable crop, with apples quite profitable on some farms, while potatoes have not been very profitable. Considered as a whole, the season has been somewhat above the average for profit.

HAMPSHIRE COUNTY.

Greenwich (Walter H. Glazier). — Indian corn is 10 per cent above a normal crop in value. Root crops are little grown except in gardens, but are about as usual. Farm stock is in good condition, as a rule, as feed has been good in pastures all summer. Fall seeding is looking finely. Potatoes have been our most profitable crop. Springfield is beginning to call for milk from the south part of our town, and some of our farmers are selling. Considered as a whole, I think the season has been a profitable one for our farmers.

Amherst (Wm. P. Brooks). — Indian corn is considerably above the normal; a large growth, and well ripened. Root crops are average crops, but are not important. Farm stock is in excellent condition,

as pastures have been unusually good. Fall seeding is uncommonly good. Onions are the lowest in price for many years; tobacco higher than average; potatoes average; other crops about average. Tobacco, potatoes, hay and corn have been our most profitable crops, and onions our least profitable one. Considered as a whole, the season has been more profitable than usual, except for onion growers.

Hadley (L. W. West). — Corn is a normal crop in value. Root crops are very light. Farm stock is in good condition. Fall seeding done early in corn is in the best of condition. Prices for farm crops have ruled a little above normal, except for onions. Tobacco has been our most profitable crop, and onions our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

South Hadley (W. F. Person). — The corn crop is about two-thirds of the normal in value. Root crops are up to the usual average. Farm stock looks well. Fall seeding is good, better than for years. The hay crop is our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Hatfield (Thaddeus Graves). — Corn is 20 per cent better than usual. Root crops are good average crops. Stock in pastures is a little thin, grass being less abundant than usual. Fall seeding is in good condition. Prices for crops raised for market have been about the same as usual. Tobacco has been our most profitable crop, being unusually fine. Onions are our least profitable crop, being affected by blight. The season has been a profitable one where farmers had both tobacco and onions, and very unprofitable where onions were the only reliance.

Southampton (C. B. Lyman). — There is a very good crop of Indian corn, rather better than the average. Root crops are fair, perhaps not quite up to the average. Farm stock is looking well. Fall seeding has done very well, the season being very favorable for it. Prices for farm crops are fully up to former years. Tobacco, fruit and grass have been our most profitable crops. Tobacco farmers are the only ones who have been able to make any money this year, the others being unable to get more than a comfortably good living.

Goshen (Alvan Barrus). — Indian corn is rather above a normal crop. Root crops are nearly or quite up to the usual average. Farm stock is in very good condition, as a rule. Fall seeding is in first-rate condition. Prices for crops raised for market are about the same as usual, but below the advanced price of labor. Hay has been our most profitable crop. Apples are mainly a poor crop, but very uneven, with a few fine ones. Owing to high price, poor quality and the difficulty of securing any farm help when needed, the season has not been a success, as a whole.

Middlefield (J. T. Bryan). — There is the best crop of corn for many years. Root crops are up to the usual average. Farm stock is in

excellent condition. The weather has been pretty dry for fall seeding, but it is looking fairly well. Prices of all products have been good. Hay and corn have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

HAMPDEN COUNTY.

Tolland (Eugene M. Moore). — Indian corn is 25 per cent above the normal in value. Root crops are more than average crops. Farm stock is in good condition. Fall seeding is in fair condition. The hay crop has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for farmers.

Blandford (Enos W. Boise). — The corn crop is extra good, no soft corn. All root crops are good normal crops of good quality. Farm stock comes to the barns in good average health and flesh. What little fall seeding has been done is not looking well. All farm crops have brought good prices. Grass has been the most profitable crop, all things considered, although the apple crop is a clear second. Potatoes have been the least profitable. As a whole, the season has been one of profit to our farmers.

West Springfield (N. T. Smith). — The corn crop is fully average, both in grain and stover. Root crops are up to the usual average. Farm stock is in very good condition. Fall seeding is about average in condition, but below average in quantity. Prices for crops raised for market have been fully up to the average, except for onions. Corn and hay have been our most profitable crops, and apples and onions our least profitable ones. Considered as a whole, the season is slightly above the average year for profit.

Agawam (J. G. Burt). — The corn crop is a little better than the normal. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is rather light, owing to dry weather. Prices for market crops are a little better than in former years. Corn, potatoes and tobacco have been our most profitable crops, and onions and celery have been our least profitable ones. The season has been a profitable one for our farmers, the best for years.

East Longmeadow (John L. Davis). — Indian corn is a third above an average crop in value. Root crops are not up to the usual average, owing to dry weather. Farm stock is in good condition. Fall seeding is late, being delayed in starting by dry weather. Prices have been very good for farm crops. Corn has been our most profitable crop, and potatoes our least profitable one. Nature has done well for the farmers, but the farm help has offset that. If a farmer has had good help, he has prospered; otherwise, he has not found the season better than in other years.

Hampden (John N. Isham). — Indian corn compares well with any crop of late years. Root crops are just a little below the average. Farm

stock is in good condition. Fall seeding is a little backward, but is starting finely. Prices of crops raised for market have compared well with former years. Hay, corn and apples have been our most profitable crops, and potatoes and onions our least profitable ones. In spite of some drawbacks, the season has been a fairly profitable one.

Palmer (O. P. Allen). — The corn crop is a little below the normal. Root crops are very nearly up to the average. Farm stock is in quite good condition. Fall seeding is in good condition, rather better than usual. Prices for crops raised for market have been higher than usual. The hay crop has been our most profitable crop, and potatoes our least profitable one. I think that the season has been a profitable one for our farmers.

Holland (Francis Wight). — The corn crop is a full normal crop. Root crops are good average yields. Farm stock is in fairly good condition. Fall seeding has not been done to any extent. Prices for crops have not changed much from other years. Corn has been our most profitable crop, and apples our least profitable one. The season has been a profitable one in a measure, but help has been very scarce and very high.

WORCESTER COUNTY.

Warren (W. E. Patrick). — The corn crop is a full normal crop. Root crops have proved to be fully up to the average. Farm stock is in excellent condition. Fall seeding is looking finely. Prices for crops raised for market have compared favorably with recent years. Grass, corn and all forage crops have been among our most profitable crops, while potatoes and apples have been our least profitable ones. Considered as a whole, the season has been a very profitable one for farmers in this locality.

New Braintree (Chas. D. Sage). — Indian corn is a good crop, but little grown except for the silo or fodder. Root crops are little grown. Farm stock of all kinds is looking finely. Very little if any fall seeding has been done. Prices for crops raised for market are about average. Hay, oats and corn are our most profitable crops, and potatoes our least profitable one. The season has been a good one for making milk, and has therefore been profitable in this dairy section.

Oakham (Jesse Allen). — Indian corn is a full average crop. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding looks well. Prices for crops raised for market have compared well with other years. Hay has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Petersham (B. W. Spooner). — The corn crop is 20 per cent above the normal in value. Root crops are above the average. All dry stock is looking well. Less fall seeding than usual has been done, but that put in is looking finely. Crops raised for market have brought about the same prices as usual. Hay and corn are our most profitable crops, and the potato crop the least profitable one, being very light.

This is a dairy section, and farmers have done better than usual, as the feed has been good all summer.

Winchendon (Arthur Stockwell). — Farm stock is in fine condition. Fall seeding is looking finely. Prices for crops raised for market have been about the same as usual. Potatoes have been our most profitable crop, and corn our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Ashburnham (E. D. Gibson). — Indian corn is about normal in value. Root crops are hardly up to the average, as it has been too dry for them. Farm stock is in good condition. Fall seeding is only fair, and not as much has been done as usual. Prices of crops raised for market have compared well with former years. Corn has done well, also vine crops. Potatoes have been unprofitable with many. The season has been fully an average one for profit.

Westminster (Alden J. Foskett). — Indian corn is a full crop. All root crops have yielded well. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have all been good. Hay has been our most profitable crop, and none of our leading crops have been unprofitable. Considered as a whole, the season has been a profitable one, and farmers are quite contented.

Lancaster (S. C. Damon). — Indian corn is 75 per cent of a normal crop. Carrots, mangolds and turnips are very good. Farm stock is in good condition. Fall seeding is well started. Prices for farm crops have kept well up to the average. Potatoes have been our most profitable crop. The apple crop has failed in many localities, and is missed by the farmers.

Bolton (H. F. Haynes). — Corn is fully up to the normal in value. Root crops are average crops. Farm stock is in good condition. Fall seeding looks well. Apples are selling at $1.75 per barrel, and potatoes from 60 to 65 cents per bushel. It is hard to say what crops have been most profitable; everything has sold at fair prices. Hay, corn and potatoes are all good crops, and apples are about 60 per cent of a full crop; so, on the whole, the season has been a profitable one.

Worcester (Silas A. Burgess). — Indian corn is fully up to the normal in value. Root crops have proved to be average crops. Farm stock is in good condition. Fall seeding is good, but rather late. Prices of crops raised for market have been well up to the average. Grass, hay, corn, millet and other fodder crops have been profitable, while potatoes have been our least profitable crop. Considered as a whole, the season has been a profitable one for our farmers.

Auburn (Wm. Gilbert). — Corn is about 25 per cent above the normal. Turnips and carrots are good crops. There has been so much feed in the pastures that cattle are in good condition. Prices for early crops were good, but those for late crops poor. Corn, cabbages and celery have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Oxford (D. M. Howe). — The corn crop is about normal in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in fine condition. Prices for crops raised for market have been higher than usual. Apples have been our most profitable crop, and onions our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Sutton (C. P. King). — The value of the corn crop is about the same as usual. Root crops are good average crops. Farm stock is in good condition. Fall seeding is in good condition. Tomatoes and cabbages have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, I do not think the season has been a profitable one for our farmers.

MIDDLESEX COUNTY.

Hopkinton (W. V. Thompson). — Indian corn is a little better than a normal crop. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been better than usual. The corn crop has been our most profitable crop, both for grain and ensilage. There have been crops in most everything, and they have brought fair prices. Considered as a whole, the season has been a profitable one for our farmers.

Sudbury (Edgar W. Goodnow). — Corn is above the normal in value. Root crops are about normal. Farm stock is looking well. Fall seeding is not looking well, owing to the dry weather. Crops raised for market have sold low, compared with former years. Cucumbers and tomatoes have been our most profitable crops, and sweet corn and cabbages our least profitable ones. Considered as a whole, the season has been an unprofitable one for farmers.

Stow (Geo. W. Bradley). — Indian corn is a little above the average. There is about a normal yield of root crops. Farm stock is in very good condition. Early seeding is looking well, but later pieces are uneven. As a whole, prices for farm crops have been a little better than usual. Hay has been our most profitable crop. No crop has been especially unprofitable, as all sold fairly well at some part of the season. I should say the season had been a profitable one for our farmers.

Dunstable (A. J. Gilson). — The value of the corn crop is about normal. Root crops have proved good in quality and quantity. Farm stock as a whole is in good condition. What fall seeding has been done is in good condition. Crops raised for market have averaged about the same in price as in former years. Hay has been our most profitable crop, and apples our least profitable one. The season has been about an average one for our farmers.

Carlisle (Alvah Carr). — There was a good crop of corn, but sweet corn brought very low prices. Root crops are good average crops. Stock is in good condition, owing to the abundance of feed. Fall seed-

ing is in very fine condition. Hay has been our most profitable crop, and sweet corn and apples our least profitable ones. On the whole, the year has been a good one for our farmers, as we have had good crops of most everything; but prices have been a little low.

Tewksbury (Geo. E. Crosby). — Root crops are up to the usual average. Farm stock is in very good condition. It has been rather too dry for the best development of fall seeding. Prices for crops raised for market have averaged about the same as for the past five years. Sweet corn, potatoes and tomatoes have been our most profitable crops, while celery is a failure and cauliflower not much better. For general farmers the season has been a profitable one.

Concord (Wm. H. Hunt). — There was a very fair corn crop. Farm stock is in average condition. Fall seeding is looking very well at present. Truck crops have brought rather low prices. Asparagus has been our most profitable crop, and market-garden crops other than asparagus our least profitable ones. As a whole, the season has been a profitable one for our farmers.

Winchester (S. S. Symmes). — No Indian corn is raised here. Root crops are up to the usual average. Farm stock is in first-class condition. Fall seeding is in good condition. Prices for crops raised for market have been just about the same as in former years. Cauliflowers are very late; they have sold high to date, but unless the weather continues favorable one-half the crop will be lost. Most celery is smaller than usual, but good celery is selling at a good price.

Stoneham (J. E. Wiley). — Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been a fair average. Lettuce has been our most profitable crop, and onions our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Newton (G. L. Marcy). — Indian corn is not raised to any extent. Root crops are average yields. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been average with other years. The season has been peculiar, and it is hard to tell which crops have or have not been the most profitable; but I believe on the whole the season has been one of average profit.

ESSEX COUNTY.

Salisbury (Wesley Pettengill). — Indian corn is 20 per cent above the normal. Root crops have proved to be about average. Stock will go to the barn in fine condition. Not as much fall seeding has been sown as usual, and it is not looking very well. Prices for crops raised for market have been fully up to the average. Hay has been our most profitable crop, and potatoes our least profitable one, the labor and fertilizer bills reducing the profit on this crop. The season is not as profitable as some years, as our apple and squash crops are light.

Groveland (A. S. Longfellow). — There is a full crop of Indian corn. Root crops have proved to be average crops. Farm stock is in

very good condition. Much fall seeding was killed by the hot, dry weather. Prices for crops raised for market have compared very well with former years. Hay, corn and tomatoes have been our most profitable crops, and cucumbers our least profitable ones. The season has been rather better than the average, with no destructive droughts or storms, no potato rot, plenty of feed in pastures, and fair crops of all kinds with fair prices.

Newbury (Geo. W. Adams). — There is an average crop of corn. Root crops are up to the usual average. Fall seeding is excellent, but a little late. Prices for crops raised for market are about as last year. Corn and potatoes have been our most profitable crops, and strawberries and pears our least profitable ones. As last year, hundreds of bushels of apples will not be harvested, owing to excessive cost of labor. The season has not been a profitable one, a short crop of apples and constantly increasing cost of labor having destroyed profit.

Topsfield (B. P. Pike). — No corn is raised for grain in this vicinity. Root crops are below the average owing to dry weather. Farm stock is in fair condition. Fall seeding is not an average, owing to dry weather. Prices have not been quite as good as usual, but crops have been better. Hay and milk have been our most profitable products, and corn our least profitable crop. Considered as a whole, the season has been a profitable one for our farmers.

Wenham (N. P. Perkins). — Sweet corn has not paid as well as last season, as prices have been low; not much field corn raised. Carrots and parsnips have been good, beets and onions uncertain. Stock is generally looking well, but the milk production is not as good as usual. There is an average catch on fall seeding, but it is rather backward. Prices for farm crops have been rather low this fall, but better prices are hoped for for the winter. Carrots, parsnips, milk, hay and cabbages have been our most profitable crops, while cabbages, squashes cucumbers, apples and onions have been our least profitable ones. Considering present prospects for crops not disposed of, the season promises to be a profitable one.

Danvers (C. H. Preston). — Indian corn is better than an average crop. Root crops are up to the usual average in yield. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been average, or a little under. Considered as a whole, the season has been a profitable one for our farmers.

NORFOLK COUNTY.

Randolph (Rufus A. Thayer). — Indian corn is a good average crop in value. Root crops are about 80 per cent of an average yield. Farm stock is in good condition. Fall seeding is in good average condition. All crops have brought full prices. Sweet corn has been our most profitable crop, and squashes our least profitable one. Considered as a whole, the season has been a profitable one. The hay crop

was not up to the average. The uncertainty and cost of help is the great drawback with most farmers.

Canton (Edwin V. Kinsley). — Corn is above the average in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in very good condition. Prices for crops raised for market have been rather under the average. Onions, barley, potatoes and early sweet corn have been our most profitable crops, while late potatoes and cabbages have been our least profitable ones. Stock is thrifty and barns quite full, although much of the first crop of hay is poor. The season is a fair average one for profit.

Norwood (F. A. Fales). — Indian corn is about 80 per cent of an average crop. Root crops have done well. Farm stock is in fine condition. Fall seeding is rather late here, owing to the dry weather. Prices for crops raised for market have not been as good as in 1905. Sweet corn has been our most profitable crop, and potatoes our least profitable one. The season has been fairly profitable, but the squash and potato crops have been short.

Walpole (Edward L. Shepard). — The corn crop is 80 per cent of the normal in value. Root crops are not up to the average. Farm stock is below the average in condition. Prices for crops raised for market have been higher than usual. Hay has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been about an average one for profit.

Bellingham (John J. O'Sullivan). — Indian corn is about an average crop. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in very good condition. Prices for crops raised for market have been a little higher than usual. Hay has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — Indian corn is about a normal crop. Root crops are fully up to the average. Very little fall seeding has been done, owing to dry weather. Farm stock is in good condition. Hay and potatoes bring slightly higher prices than formerly; other crops about the same as usual. Hay has been our most profitable crop, and apples our least profitable one, having been generally destroyed by a hail storm. All things considered, the season has been an average one for profit.

Attleborough (Isaac Alger). — The corn crop is above the normal in value. Root crops are up to the usual average. Farm stock never was in better condition. Fall seeding is in good condition. Prices for crops raised for market are about the same as usual. Potatoes, strawberries and cranberries are our most profitable crops, and winter apples are a total failure. The season, considered as a whole, has been a remarkably good one.

Berkley (Rollin H. Babbitt). — Indian corn is much above a normal crop. Root crops are up to the usual average. Farm stock is looking very well. Where seeded early, fall seeding looks well; but where put in late, it is backward for want of rain. Prices have ruled very well for crops raised for market. Sweet corn and potatoes are our most profitable crops, and strawberries our least profitable one. The season has been a fairly profitable one for our farmers, as a whole.

Swansea (F. G. Arnold). — The corn crop is about normal in value. Root crops are up to the usual average. Farm stock is in very good condition. Though late fall seeding looks well. Prices for crops raised for market average about the same as usual. Potatoes have been our most profitable crop, and cabbages our least profitable one. I think the season has been above the average as to profits.

Westport (Albert S. Sherman). — The corn crop is 25 per cent above the normal. Root crops are up to the usual average. Farm stock is in very good condition, and milch cows are in fine condition. Fall seeding is not good, owing to dry weather and late seeding. Prices for crops raised for market have been rather better than in former years. The corn crop has been our most profitable crop, and potatoes our least profitable one, as they require a great deal of labor and generally do not do well. Onions did not do well, but nevertheless there is a fair crop. Apples are not plenty, but late pears are abundant. The season has been a fairly profitable one.

Acushnet (Moses S. Douglas). — Indian corn is 25 per cent above the normal in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is late, and has not got a good start. Prices have been a little better than usual. Hay has been our most profitable crop, and potatoes and apples our least profitable one. The warm weather is holding on remarkably, and fall crops are growing well. I should call the season a profitable one for our farmers.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — Indian corn is better than an average crop. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market have been about average. Corn has been our most profitable crop, and potatoes our least profitable one. Considered as a whole, the season has been a fairly prosperous one for our farmers.

Norwell (H. A. Turner). — The corn crop is about normal in value. Root crops seem to be average yields. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market are about normal. Cauliflowers and tomatoes have been our most profitable crops, and potatoes and cabbages our least profitable ones. Considered as a whole, the season has been a very good one for our farmers.

Duxbury (Robert Randall). — The corn crop is not as plentiful as last year. Some root crops show average yields, while others do

not. Farm stock is looking nicely now. Not much fall seeding has been done here. Prices for market crops are much advanced. Potatoes are our most profitable crop. From early spring until late summer peas and beans were plentiful, as was also sweet corn in its season. The season has been profitable for some farmers, while for others it has not been so good.

Halifax (G. W. Hayward). — The corn crop is above the average in yield and value. Root crops have given average yields. Farm stock is in excellent condition. Fall seeding was late, owing to dry weather, but it is beginning to look better since the rains. Prices for crops raised for market have averaged as high as in former years. Hay has been our most profitable crop, and potatoes and onions our least profitable ones. The season has been fairly profitable, and we have no reason to complain.

Plympton (Winthrop Fillebrown). — The corn crop is far above the normal. Root crops have proved to be average crops. Farm stock is looking very well. Fall seeding looks the best it has for years. The prices of crops raised for market are about as usual. Cranberries and hay are our most profitable crops, and corn has been unusually good.

Lakeville (Nathaniel G. Staples). — Indian corn is about a normal crop. Root crops are up to the usual average. Farm stock is in fair condition. Fall seeding not up to the average. Prices for crops raised for market are better than usual. Sweet corn has been our most profitable crop, and strawberries our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Rochester (Geo. H. Randall). — Indian corn is fully up to the average in value. Root crops have proved to be average crops. Farm stock is in better condition than usual. Fall seeding shows the effects of dry weather, and is not looking as well as two weeks ago. Prices for crops raised for market have been up to the average. Corn and hay have been our most profitable crops, and potatoes our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

BARNSTABLE COUNTY.

Falmouth (Daniel R. Wicks). — The corn crop is fully up to the normal. Most varieties of root crops are average crops and turnips are above the normal. Farm stock is in fine condition. Fall seeding is in good condition, and making fine growth. Prices for farm crops have as a whole been a little higher than usual. Potatoes have been our most profitable crop, and hay our least profitable one, as much of it is only fit to be used as bedding, owing to bad weather in haying time. As a whole, the season has been a profitable one for our farmers.

Barnstable (John Bursley). — The corn crop is 90 per cent of a normal crop in value. Root crops are up to the usual average. Farm stock is in good condition. Fall seeding is in poor condition. The prices of crops raised for market have been above the average. Cranberries have been our most profitable crop, and potatoes are possibly

our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Harwich (Ambrose N. Doane). — The corn crop is about normal in value. Turnips and carrots are good crops. The condition of farm stock is good. Fall seeding is in fair condition. Prices for crops raised for market are much higher than usual. Cranberries, potatoes and turnips have been our most profitable crops, and onions our least profitable one. We are not a large farming town, but, on the whole, this has been a good year for the farmers.

Brewster (Thos. D. Sears). — The corn crop is rather below the average. Root crops are above the average. Farm stock is looking well. The weather has been rather dry for the best development of fall seeding. Prices for crops raised for market compare favorably with former years. Cranberries and potatoes have been our most profitable crops, and corn our least profitable one. Considered as a whole, the season has been a profitable one for our farmers.

Eastham (J. A. Clark). — There is a small acreage of corn, but a fair crop. Root crops will give average yields. Farm stock is in good condition. Fall seeding is in fair condition. Prices for crops raised for market have been fully up to the average. Asparagus is our leading early crop, and, while not as heavy as some years, brought good prices. White Cape turnips are the leading late crops, and while they looked like a failure at one time, they have improved lately and will make a fair crop. Considered as a whole, the season has been a profitable one for our farmers.

Wellfleet (Everett S. Jacobs). — The Indian corn crop is about normal. Root crops are below the average. Farm stock is in good condition. Fall seeding is in good condition. Prices for crops raised for market are above the average. Cranberries, corn and potatoes have been our most profitable crops, and beans our least profitable one. Considered as a whole, the season has been about an average one for profit.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — The corn crop is an average one. Root crops are about average in yield. Farm stock is in very good condition. Very little fall seeding is done here. Prices for crops raised for market have been average with other years. Potatoes have been our most profitable crop, and hay our least profitable one. The season will compare favorably with past seasons in the matter of profit to the farmers.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

PEACH CULTURE.

By F. A. WAUGH, *Professor of Horticulture, Massachusetts Agricultural College.*

Interest in peach culture has evidently increased very greatly in New England during the last few years. In spite of unusually severe freezes during winters of 1902–03 and 1903–04, there have been several good crops gathered during the last five years. In most cases reasonable profits have been made, and in some instances the returns have been so large as to be fairly remarkable.

There is every reason to believe that the peach business in New England will continue to be an attractive commercial proposition. The uncertainty of the winters is of course a drawback, but aside from this the situation is altogether favorable. We have directly at hand the finest market on this continent. The difficult problems of long-distance shipment, refrigerator car service, icing charges, etc., which confront the southern peach grower, are entirely eliminated from our calculation. Not only can our fruit be put into market much more cheaply and quickly, but on that account it can be presented to the customers in much better condition. For all these reasons the net prices realized by New England peach growers are bound to be very much greater than those received by the peach growers of the south. It thus seems altogether probable that the investment in commercial peach growing in New England will be substantially increased during the next few years.

Peaches may be grown in all parts of Massachusetts. They may be made commercially successful in the majority of towns in the State. In the highest localities and in some of the towns along the coast peach growing cannot be safely undertaken on a large scale. In every locality it is advisable to plant peach trees only on land specially suited to this crop.

SOILS AND EXPOSURES.

There is a general understanding that peaches should be planted on a north or northeastern exposure; that is, upon land sloping towards the north or northeast. This rule rests upon the fact that land sloping

towards the south or southwest is necessarily warmer, and the trees start into growth earlier in the spring. It depends also on the further assumption that the trees will blossom enough earlier on the southeastern slope so that the crop will be caught by late frosts in certain years. It must be said that, while this assumption may prove true in a few cases, it will not hold good for the majority of localities in Massachusetts, — at least not for Worcester County and the territory from there to the western line of the State. Old peach growers who have observed this matter closely assert that the peach buds in western Massachusetts are never killed by late frosts. This observation agrees entirely with the experience of the writer, although that experience covers only four years of residence in the State. Peach buds are often injured, and, indeed, entire crops are lost; but the injury is due to heavy freezing during the winter, and not to the blossoms being caught by late frosts in the spring.

These observations have an important bearing on the question of exposure. If it is a fact that the crop never suffers from late frosts, then the selection of a north or northeast slope is of much less consequence. On the other hand, there are some real advantages in a warmer exposure. We have none too much summer heat in most parts of Massachusetts for the proper ripening of the peach crop. The trees thrive better in warm situations, while the crop of fruit ripens better, takes a better color and reaches a higher quality.

The ideal soil for peaches is found on some of our warm, gravelly hilltops and hillsides. The small drumlins, made up of loose glacial deposit, found in the Connecticut valley region, are apt to be especially good. Even sandy soils are excellent for growing peaches, unless the sand is too fine or unless the drainage is bad. Heavy, cold clay soils are entirely unsuited to the peach tree. In this connection it may be well to point out that peach trees may be to some extent adapted to clay soils of fairly heavy texture by being propagated on plum roots. The plum is naturally adapted to a stiffer soil than the peach. The peach tree may be readily budded on to the plum root, and, if the proper variety of plum is chosen, the union is a good one and long-lived. The Myrobalan plum — the one usually used in this country as a budding stock — is probably the poorest one of all for the propagation of peaches. The old-fashioned "horse plum," which formerly was used in some nurseries, is much better. The St. Julien plum, used in many European nurseries, is satisfactory, and can always be secured commercially, although it costs considerably more than the Myrobalan. The native Americana plum, now extensively grown in western nurseries, makes an admirable stock for peaches, and is well adapted to our Massachusetts soils. All these plum stocks have more or less of a tendency to dwarf the peach tree, but this is an advantage rather than a disadvantage. The fact that the peach trees are thereby brought earlier into bearing increases the chances of securing a crop before

the tops are frozen back; and the fact that the smaller trees may be planted more thickly on the ground is an economy of land.

There are no nurseries in the United States, so far as the writer knows, where peach trees are being commercially propagated on plum roots. There probably never will be until a strong demand arises for that kind of peach trees, because it necessarily costs more than to propagate them in the usual way. These suggestions, therefore, are practically available only to those men who like to bud their own trees. The majority of us, who are compelled to depend on the nurserymen, will still be satisfied with peach trees on peach roots.

Planting the Orchard.

The soil must be in prime condition before the trees are set. This is a rule which applies to all fruit trees, but more emphatically to the peach than to any other. The land should be in prime cultivation, deeply plowed, well drained and in good physical condition, and should contain a reasonable amount of available fertility. Tile drainage, always a safe undertaking on high-class agricultural land, is the means of improvement advisable on many tracts designed for peach culture.

It is an open question whether fall planting or spring planting is better. Under certain circumstances one will succeed better than the other; but given other circumstances, and the other will have the preference. As a general thing, it may be said that fall planting is better when all conditions are thoroughly favorable. If the soil is in first-class condition, if the trees are fresh and sound, if the planting is well done and if a favorable winter follows, then fall planting is likely to show a positive advantage over spring planting. On the other hand, if the soil is not well drained, if the trees are in poor condition, if the planting is carelessly done or if it should be followed by a severe, freezing winter, there is likely to be more or less damage, as a result. On the whole, the writer is inclined to favor fall planting for the experts who have everything their own way, and who are able to control conditions in their favor; but to advise spring planting for men of less experience, or for those less favorably situated.

Good peach trees fit to plant must be one year old. Two-year-old trees are seldom worth the trouble of planting out. The so-called "June buds," which technically pass as one-year-old trees, but which are really something less, are not to be recommended; they should be bought only as a last resort.

Good trees should be of medium to large size. Small, light trees are inferior, while the very largest ones are difficult to handle, and are not proportionately valuable. Amongst nurserymen trees are usually graded according to the size. One grade runs 4 to 5 feet; the next 5 to 6 feet, the next grade 6 to 7 feet. As a rule, the writer prefers trees of the 5 to 6 foot grade. Splendid peach trees can be grown in Massachusetts nurseries, but, as a matter of fact, very few of them

are grown here, chiefly because they can be grown very much more cheaply in States farther south. It has been the experience of the writer that these southern-grown trees are just as good for planting in Massachusetts as those grown in the neighborhood.

When the ground is all prepared and ready, the rows furrowed out and the holes dug, the trees should be taken out of the soil where they have been heeled in and prepared for planting. This preparation is made by cutting them back with the pruning shears. All broken and straggling roots should be first cut off. Some growers now practise cutting all the main roots back to a length of 3 or 4 inches. Perhaps this is going a trifle too far, but at any rate one need not take the trouble of digging wide holes in order to plant out very long roots; it is just as well to cut them back a reasonable amount.

There is room for a greater difference of opinion concerning the best pruning for the top of a peach tree about to be planted. Three methods may be mentioned: (1) all the branches may be cut back to a length of four or five inches; (2) all the branches may be cut off close to the main stem, leaving a straight whip; (3) all the branches may be cut off, and the main stem cut back to any desired height, from 8 inches and upward. The writer very much prefers the method last described, and would cut back the main stem to a height of not more than 20 inches, preferably not more than 16 or 18 inches. This looks like very severe treatment, since in many cases it would leave less than one-fourth or one-eighth of the tree as it originally comes from the nursery. Nevertheless, the results, as shown in the first year's growth of the tree after planting, are always gratifying. A tree cut back in this way throws out a few side shoots, usually symmetrically placed abut the trunk, and these make a very strong growth during the first year. There is thus formed a fine framework upon which to build the future fruit-producing structure. Peach trees, on the other hand, which are planted out without this severe cutting back, push into growth from a larger number of buds. Dozens or even hundreds of new shoots start out, all of which make a weak growth. There are no strong, vigorous arms formed, which may become the framework of a permanent tree. Of course a great deal depends upon the future management of the peach tree top, but a good deal also depends on beginning right.

Planting Distances.

The proper distance apart for planting peach trees depends more or less on circumstances, especially on the system of culture and pruning which is to be adopted. If the trees are to be rigorously headed back, they may be safely planted at a distance of 12 feet apart, or even 10 feet. If they are to be allowed to grow without heading in, they should be planted 20 feet apart, especially if the soil is naturally rich. There is often a good deal of unnecessary argument over this question of planting distance. The question is really not one to be

decided by itself; it is altogether relative, and is to be settled only with reference to the system of management which is to be adopted in the orchard.

Cultivation.

There has been some argument in the last few years as to the best systems of managing apple orchards, some respectable fruit growers maintaining that the best practice required the trees to be kept in sod. Practically nobody recommends sod management for peach orchards, however. While there are isolated instances of successful peach trees standing in grass, they are so rare as to be negligible. The peach tree is a gross feeder, a rank grower, and requires large quantities of plant food and moisture to develop its fruit crop. These requirements are best met by a system which introduces thorough cultivation during the period of growth.

There are many systems of culture, differing more or less widely from one another, but an ideal system presents about three stages, as follows: (1) a reasonably thorough plowing of land early in the spring; (2) frequent surface cultivation up until midsummer; (3) the growing of a cover crop, which remains on over winter and is plowed under the following spring.

The first cultivation in the spring has been spoken of as plowing. It may, in fact, be accomplished with a good plow, a steady team and a good driver. After the centers have been plowed out between the rows, it is possible to get somewhat nearer the trees by the use of a one-horse plow. However, on most lands and under most circumstances the best implement for the spring plowing is a good, sharp spading harrow; even a disk harrow will do very well on light soils. If this implement has the convenient extension now provided by most manufacturers, it becomes very easy to run up close to the trunks of the trees. In using the disk or spading harrow, it is best to go across the land in both directions. This may be necessary also with the plow, although it is not so conveniently done.

The summer cultivation should be given with much lighter tools running only on the surface of the soil. A light, sharp smoothing harrow is best of all where the ground is mellow and in good condition. The Acme harrow is also excellent for this kind of work. On gravelly or somewhat stony soils the springtooth harrow is best of all. Again, if the soil is inclined to bake or is naturally hard, the best results can be secured with the disk harrow. This summer cultivation should be frequent; it should be given at intervals not greater than ten days; once a week is still better. The drier the weather, the more frequent should be the cultivation. It is a great mistake to time this work by the growth of weeds. This summer cultivation is not intended to keep down weeds, but to conserve moisture and promote the liberation of plant food.

The vigorous growth of the trees ceases about July 1; thereafter the wood ripens and the fruit buds mature for the following year. If

there is a crop of fruit on the trees, of course it also has to be brought forward to maturity. As a rule, however, the demands for moisture on the part of the tree are not so great as during May and June. Long experience and thorough scientific experiments agree that cultivation may be profitably remitted after about July 1. Experience has shown, however, rather emphatically, that it is unwise to allow the land to stand bare for the remainder of the year. However, the requirements are all reasonably well met by sowing a cover crop at the time of the last cultivation.

A cover crop in an orchard performs several useful functions. It holds the soil from washing during winter and spring months, it takes up fertilizer and prevents leaching, it renders a certain amount of plant food available storing it for future use, it may collect a considerable amount of nitrogen from the atmosphere; but perhaps its most important office is in keeping the soil supplied with humus. This last benefit is accomplished when the plants are plowed under in the spring.

Various crops have been recommended for covers in peach orchards, but some experience is required to select the one best adapted to a given soil and climate. As a rule, preference should be given to leguminous crops which collect nitrogen from the atmosphere. The various clovers, especially those of larger growth, make fairly good cover crops. The vetches are excellent. The winter vetch is especially good, its chief drawback being the high price of the seed. Cow-peas are a favorite crop in southern latitudes, but are not generally satisfactory in Massachusetts. Early maturing varieties of soy beans have been found amongst the best of all cover crops in our experiments. A very excellent cover can be secured by sowing a mixture of Canada peas and barley. Buckwheat makes a first-class cover crop, and has the advantage of germinating well. Winter rye is sometimes used, and oats are better than nothing.

In planting any of these cover crops the seed should be sown in large quantities, in order to make a thick mat. We have found it best, in sowing such crops as soy beans, to drill them in, making the rows about 2 feet apart. When this is done we plant the cover crop two weeks earlier than we would otherwise, say about June 10 to 15. The cultivator is then run once or twice, sometimes even three times, between the rows of soy beans after they come up. In this way the cover-crop period and the cultivation period overlap one another to some extent, and this is found to be an advantage.

Fertilizers.

If a system of cover cropping is consistently followed, and if a good growth of soy beans, clover or other leguminous crop is secured from year to year, there will be no need of large applications of nitrogen; at any rate, only small quantities of nitrogen will be required on

fairly rich soils. It is not difficult to estimate the need for nitrogen by watching the growth of the peach trees. If the trees make an average growth of 18 inches or more every year, and if the foliage is large, dark colored and slightly wrinkled, one may feel satisfied that there is nitrogen enough available for the trees. On the other hand, if the growth is less than 1 foot annually, if the foliage is yellow and drops early from the trees, it is plain that more nitrogen should be given. The simplest and cheapest method of applying this element of plant food is doubtless in the form of nitrate of soda. Our experience has shown that this chemical is entirely acceptable to peach trees, and that it produces excellent results. It should be applied in quantities of 100 pounds to the acre, just after the leaves come out. In case the trees are carrying a crop of fruit, and especially in case they are not in most vigorous health, it will be well to make the application of nitrogen a little heavier, and to put it on in two dressings. The first should be given just after growth starts, and the second one when the peaches are a little larger than robins' eggs.

Dr. Van Slyke suggests the following formula for fertilizing peach trees: nitrate of soda, 50 pounds; dried blood, 100 pounds; cotton-seed meal, 200 pounds; acid phosphate, 600 pounds; muriate of potash, 240 pounds; this makes a total of 1,190 pounds, which should be the maximum application for an acre. As a rule, about half that amount would be a sufficient annual application for soils of reasonable fertility.

There is a strong prejudice against the late application of fertilizers on peach trees, and against late cultivation, on the ground that it induces a strong, soft growth of wood in the latter part of the year. The theory is that this wood is frozen back during the winter, and the tree thereby injured. While no direct experiments have been made on this point, it must be said that our rather extensive observations at Massachusetts Agricultural College have strongly discounted this theory. In our experience the trees which make the most vigorous growth are the ones which best withstand the heavy winters.

Pruning.

The peach orchard requires more thorough and regular pruning than the apple orchard, and this is saying a good deal. This matter should have attention as often as once a year. In fact, the writer is fully convinced that the best results in managing a peach orchard cannot be secured with less than two general prunings annually. One of these should be given in early spring, about March 1, and the other in midsummer, usually during the last half of June. Summer pruning rightly conducted is very advantageous in controlling the growth of peach trees.

If the top of the tree is rightly formed at the beginning, as explained in the paragraph on planting, there will be no great difficulty in form-

ing a strong symmetrical head on every peach tree in the orchard. As soon as the tree is formed and fruitage begins, some regular system of management should be adopted and consistently pursued. There are two general methods. According to the first, the tree is allowed to grow in every direction as far as its natural habit leads it, pruning being directed to the business of keeping the center opened and the branches full. A tree well grown in this manner, the formation of too many large low branches being prevented, takes on something of a vase form. From this fact it has often been called the vase form pruning. According to the other method, the tree is frequently and sometimes vigorously headed back. Branches are cut off at the sides and at the top. This heading-in requires some judgment. If carelessly and improperly done, the results are bad; if intelligently followed, however, the method is all that could be desired.

Vigorous, healthy peach trees in full growth and well set with fruit buds should be headed back at a spring pruning (if the heading-back method is to be followed), leaving just enough one-year-old wood to carry a reasonable crop of fruit. In any year when the fruit buds have been killed by freezing, the heading back may be somewhat more severe; at such times it is practicable to cut back to two-year-old wood; in some places it is safe to cut even into three-year-old wood. If trees are weak and unhealthy, vigorous heading back is still more desirable. Vigorous heading back in this connection, however, does not mean the removal of the entire top of the tree, as is sometimes practised under other conditions for other purposes.

The summer pruning of the trees, already referred to, should be directed to the removal of excessive growth. Any tree which is growing is apt to choke its head with strong shoots, which shut out the light from the interior, prevent the proper coloring of the fruit and prevent also the formation of fruit buds for the succeeding crop. The slight check which is given by the removal of green shoots during the summer is advantageous also in promoting the formation of fruit buds.

The thinning of the fruit may be regarded as a sort of pruning. If pruning is practised, as advised above, a certain amount of thinning of the fruit results as an incidental benefit. Whether summer pruning is given or not, considerable thinning of the fruit is advisable in any year when the crop sets reasonably well. Experience everywhere has shown that money expended on thinning pays a large profit.

Diseases and Difficulties.

The great danger which a peach orchard in Massachusetts always runs is that of heavy winter freezing. The peach grower must take this chance into account when he starts into business. In case a heavy freeze occurs and the trees are injured, the damage can be repaired somewhat by proper management. Extensive experiments on this subject, conducted by the Hatch Experiment Station of the Massa-

chusetts Agricultural College, have shown that moderate heading in of the trees after a heavy freeze gives best results. This should be followed by thorough cultivation, and the application of a small amount of nitrate of soda. Trees once severely frozen, however, will never fully recover.

The curculio is often spoken of as a serious pest in peach orchards. Its ravages are easily overestimated. As a matter of fact, this insect makes little impress on any good commercial crop. Those fruits which are punctured come off in the June drop or are removed at thinning time. The percentage of otherwise good peaches lost from this insect is usually so small as to be entirely negligible. Where the insects are really bad, it may be worth while to jar them off the trees and burn them.

In some years, especially when the crop is heavy and the ripening season is warm and moist, there is serious loss from ripe rot of the fruit. After this trouble makes its appearance there is very little to do except to pick the fruit early, and get it into a cool room as quickly as possible. The rot can be to some extent prevented with thorough spraying with Bordeaux mixture. For this purpose spraying should be done early, even before the buds open in the spring.

The peach yellows is still with us, although there is less said about it than formerly. The best and safest practice is to dig up and burn immediately every tree which is found infested with this disease.

The San José scale is unquestionably the most serious pest which the peach grower has to deal with. This vile insect seems to have a special preference for peach trees. Various methods of fighting the San José scale have been tested and widely discussed during the last few years. It would require an entire bulletin to set this matter forth in any detail. It may suffice for the present to say that the lime-sulphur spray has been found altogether the most efficient remedy under New England conditions thus far.

Handling the Crop.

There are all sorts of ways of selling peaches. In our experience the package in which the fruit is sold makes a great difference in the price. For fancy, especially early, varieties, we find a two-quart basket with bail the most successful. To some extent we have sold peaches locally in the four-quart till-baskets, such as are shipped six in a crate from Georgia. As a rule, this four-quart basket does not give the best satisfaction in local markets. For shipping, especially to considerable distances, the four-quart basket packed six in a crate is very satisfactory. For local markets and short shipments undoubtedly the favorite basket is the half-bushel Jersey form. As a rule, our markets prefer the real half-bushel basket, holding sixteen quarts; although in some towns the short basket, holding fourteen quarts, sells equally well. It is important to secure a good supply of clean, well-made

baskets early in the season, when one has a crop of peaches in sight. The price on baskets always goes up stiffly during the peach-picking season, and it is very distressing to run out of baskets altogether.

Varieties.

There are a great many varieties of peaches offered by the nurserymen, but a small selection will answer for home use, and a still smaller list will be better for market. Attention should be called to the fact that good, white-fleshed peaches are becoming more popular. This is partly due to the introduction of new white varieties of high quality, such as Greensboro, Hiley, Waddell, Belle of Georgia. The yellow-fleshed Elberta has come in with the other new introductions, and has promptly taken its place as the most profitable of all peaches.

In planting for family use, every one should choose his own favorite varieties. As a reasonably good selection for family use, however, we may name the following: Greensboro, Early Crawford, Mountain Rose, Foster, Belle of Georgia and Crosby. This will give a succession throughout the season.

For market purposes the following varieties have been found profitable: Greensboro, Mountain Rose, Elberta, Crawford Early and Crawford Late, Oldmixon.

The following list of varieties comprises the most popular old sorts and the most promising new ones: —

Belle of Georgia. — A very profitable peach in the south, and fairly successful in New England. To some extent this takes the place of Oldmixon, coming in about the same season. The tree is hardy. The fruit is white, freestone, of excellent quality.

Carman. — An excellent white peach for family use or local market. Large, round, white with bright red cheek. Tree hardy.

Chair's Choice. — Tree hardy. Fruit oval, deep yellow, freestone. Quite late, coming just after Late Crawford.

Champion. — Strong, upright tree, with hardy fruit buds. Prolific. Fruit round, large, creamy white with pink cheek; flesh tender and sweet. Of best quality.

Crawford Early. — Tree small, medium size, moderately productive. Fruit large, oblong, yellow, freestone, good quality. Midseason. A good peach, and worth planting.

Crawford Late. — Tree large, spreading, very hardy. Fruit very large, yellow, freestone. Late. This has been the favorite peach in Massachusetts for years, but as a market variety it is far less profitable than Elberta.

Crosby. — Tree willowy, spreading and very hardy. Fruit round, yellow, freestone, of high quality.

Elberta. — Tree strong, stocky, spreading. Very productive, — in fact, the most productive peach grown. Fruit large when properly thinned, oblong, yellow with red cheek, freestone. Quality rather poor.

This is one of the most profitable peaches grown, but the quality is not all that can be desired.

Foster. — Fruit large, deep yellow, sometimes almost red, of high quality.

Fox. — Tree strong and hardy. Productive. Fruit oval, white with blush, sweet and high flavor.

Greensboro. — This is a fine white peach with a red cheek, of good size and quality, and the earliest variety of any consequence to ripen here. It has proved very satisfactory and profitable at the Massachusetts Agricultural College.

Hiley. — Another excellent white peach of the modern style. Mid-season, or a little ahead of Mountain Rose.

Mountain Rose. — Strong, upright tree, fruit white fleshed with rosy cheek. Best quality. Excellent for home use or local market.

Oldmixon. — This has always been a favorite white peach in New England, but is now largely superseded by Belle of Georgia and other earlier and more reliable white varieties. Tree large, moderately prolific. Fruit white, freestone, tender, rich. Good variety.

Stump. — An old-fashioned white peach, preferred by some. Desirable on account of its lateness, coming at the end of the season.

Triumph. — A very hardy tree, bearing abundantly. Fruit small, yellow, of poor quality. Should not be planted.

Waddell. — A good white freestone peach, moderately early, medium size, good quality. Fruit buds hardy.