

Pear Blight.

This subject was canvassed considerably at the annual meeting of the Horticultural Society of Northern Illinois, held at Galva, of which the Farmers' Review made a stenographic report. The discussion ran as follows:

Mr. Rue—I have had some experience in pears and also in peaches. I had quite a large crop this year, the first good crop I have had, although my trees are young, perhaps, not more than seven years old. I have the Keiffer, the Seckel, the Bartlett, Lincoln, Duchess and some other varieties, and have never lost a tree from blight except the Keiffer.

Q.—Where is your place?
Mr. Rue—Monmouth. I think the Keiffer is of very fine quality. The question in my mind is whether it is blight or the borers, that was killing the tree. It would begin to die right at the body of the tree close to the ground, but I have stopped that. Whether it is the blight or not, I don't lose any more pear trees that way. I went to mulching them with tobacco stems. You know there is only one animal on the face of the earth that will touch tobacco. The last two seasons I have done that and I have not lost any trees.

Mr. Hartwell—I am afraid you haven't the Keiffer at all.
Mr. Ingells—I want to second this gentleman's statement in regard to flavor. I have twelve bushels, and I don't think I ever tasted a better flavored pear, according to my notion. They are a winter pear and not fit to eat until the middle of November.

Mr. Hartwell—What about the blight question?
Mr. Ingells—I have several varieties, and all of them have blighted except the Keiffer.

Mr. Wurt—We have some Keiffers in our nursery. This year one of our Keiffers blighted real bad on three different limbs. It was about six years old. We had some five or six other kinds along the same rows that did not show any blight. I never saw it in the Keiffer before. That Keiffer blighted near the ground, but there were no borers in it. I have never seen borers working in a pear tree. This Keiffer was very full of pears and some of the others were just the same.

Mr. Johnson—I have some of the Keiffer pear, and I have had but very little blight, although I am aware that they do blight occasionally for some reason. When it comes to the question of blight I don't know much more than I did forty or fifty years ago. Blight may be due to some surrounding condition of the soil which we cultivate, and we have got to be exceedingly close observers to ascertain the why and wherefore. We have an old Standard pear orchard in Hancock county, where I live, that has stood in sod for more than thirty years to my knowledge, and it is bearing well. That is a rather different view from what the essayist claims to have observed, but I am not prepared to say that both are correct. It may be that in the locality where those trees stand in the sod they are well enough off, and it may be that in other localities they would not do well without cultivation. But I do believe we are warranted in making an effort to grow fruit in a wider range of latitude and territory than we have ever done. I feel more encouraged today to plant than I ever did. I planted 1,000 winter apples this spring.

Mr. Soverhill—I wish I could know to a certainty whether those young pear trees were the Keiffer pear or whether they were bought for Keiffer pears. I bought and set out what I supposed was the Keiffer pear. They blighted and all died and they told me I didn't have the Keiffer pear at all. I got some fruit off the trees and after I got the Keiffer, I became satisfied that the first lot were not the Keiffer, any of them. Since I set out the Keiffer pear I have not had a limb blight. I set out the Idaho and they proved to be the Keiffer, but they have never blighted any. I have a tree of Flemish Beauty that has borne for the last fifteen years, has not made a failure in that time of bearing from three to fifteen bushels every year. I set out half a dozen at the same time, but that is the only one left.

Mr. Humphrey—Bacteria is not the cause of blight. Any one in examining the line of blight in an apple tree or a pear tree I am sure would find bacteria, but my notion is that state was secondary. If that blight generally of pear and apple trees comes in those varieties that have large sap ducts, and in this climate, where they stand in rich soil, if there comes a rush of rain and the growth is rapid and the vessels at the terminal growth are gorged, with crude sap sufficiently to start the growth with great vigor, these vessels being gorged, burst and the sap oozes out and sours. That is the cause of blight, I think. That becomes a culture ground for bacteria. The primary cause was the bursting of the gorged vessels.

Mr. Barnard—Mr. Friend speaks of blight attacking the root of the tree. Has any one here had any experience in blight appearing anywhere except in the top of the tree?

Dr. Humphrey—It might blight near the ground if the sap oozed out of the vessels. That is what causes the blight of the tree.

Mr. Hartwell—Have you opened those cells and examined to find evidence of this kind of thing?

Mr. Humphreys—Yes. I have studied up pretty conscientiously.

Mr. Rue—The pear trees I lost have not begun to blight at the top. The body turns black. In the summer you

can see it. If you take a knife and cut into the body you will find it is dying, but the top remains perfectly green.

Dr. Humphrey—A careful test has been made of the power exerted by the sap in ascending the veins.
Mr. Hartwell—I think Dr. Peabody made such an experiment. He bored a hole in the body of the tree, inserted a tube of rubber, connected with that a long glass tube, that he filled with mercury and the force of the sap lifted something like seventy inches of the mercury.

Dr. Humphrey—It will go up into a tube forty feet at the end of a grape vine.

Mr. Rue—I have been told that if you can get a pear tree ten or twelve years old, if you can get it to live that long, there is not so much danger.

Mr. Woodward—The pear tree runs very deep down in the soil and the deeper down it goes the more healthy the tree is. I know a Flemish Beauty in Marengo about twenty-five years old. It bears well every year.

Mr. Bryant—Much depends on your soil. In a very fat soil such as I have, we have put in a number of varieties of pears, some of them very rank growers, like some of these Russians, very subject to blight. We have a couple of Keiffers set the same time and they blighted, but as a rule they are pretty exempt from it in our vicinity. Mr. Soverhill's soil is entirely different. It is a light soil mostly, much more favorable than some of our fat prairie land.

Pansies need a great deal of moisture, and will thrive with frequent drenchings.

Shama Millet or Jungle Rice.

Shama Millet (Panicum colonum) is a grass with much the appearance of barnyard millet, but is smaller in every way, with a simpler inflorescence or "head." It is common in the tropical and sub-tropical regions of the Old World, where it is a native, and is widely introduced in the other warm regions of the globe. In the United States it occurs chiefly in waste places along roadsides and ditches, mostly in the south. It is quite abundant in parts of the southwest and also in Mexico. In India, Shama millet is one of the most valuable forage crops, and the seeds are used for human food. According to Church, this millet is a



FIG. 25.—Shama Millet: a, b, c, d, different views of the spikelet and glumes, or chaff; e, f, two views of the seed.

poor food; it is used in some places by a considerable number of laborers as a usual article of diet. In southeastern United States this grass thrives on rich, moist soil, and, in places, affords considerable forage of excellent quality, but little effort has been made to cultivate it. Several attempts to grow it in the north have met with poor success. At the Cornell Experiment Station it made a fair showing, "resembling poor specimens of Barnyard millet, reaching about a foot in height."

One of Lincoln's Kind Acts.

One summer morning, shortly before the close of the civil war, the not unusual sight in Washington of an old veteran hobbling along could have been seen on a shady path that led from the executive mansion to the war office, said a writer in Harper's Round Table. The old man was in pain, and the pale sunken cheeks and vague far-away stare in his eyes betokened a short-lived existence. He halted a moment, and then slowly approached a tall gentleman who was walking thoughtfully along. "Good-morning, sir. I'm an old soldier, and would like to ask your advice."

The gentleman turned, and smiling kindly, invited the poor old veteran to a seat under a shady tree. There he listened to the man's story of how he had fought for the Union, and was severely wounded, incapacitating him for other work in life, and begged directions how to apply for back pay due him and a pension, offering his papers for examination.

The gentleman looked over the papers, and then took out a card and wrote directions on it, also a few words to the pension bureau, desiring that speedy attention be given to the applicant, and handed it to him.

The old soldier looked at it, and, with tears in his eyes, thanked the tall gentleman, who, with a sad look, bade him good luck and hurried up the walk. Slowly the soldier read the card, again and then turned it over to read the name of the owner. More tears welled in his eyes when he knew whom he had addressed himself to, and his lips muttered: "I am glad I fought for him and the country, for he never forgets. God bless Abraham Lincoln!"

A Discussion on Silage.

(Condensed from Farmers' Review Stenographic Report of Missouri Dairymen's Convention.)

Following a short talk on silage by John Patterson, the following discussion took place:

Q.—How many persons in this room have had experience with silos?
Seven persons held up their hands.

Mr. Goodrich.—It took a lot of hammering for five years to get me to build a silo; it is a stave silo 14 feet in diameter and 30 feet deep. It is set 14 feet in the ground and 16 feet above ground. The best thing to put into a silo is corn, and it should be about as ripe as we have it for shocking. If it is very dry you will have to moisten it to keep it from moulding. When put in too green it will sour and not make sweet silage. Of course it is fairly good feed then, but is not so good as when it is sweet. The corn that I put in my silo this year was planted with the rows three feet apart and the grains 11 inches apart in the row; this was just ordinary corn and not the exceptionally large. Some say use the sweet corn, but it is the opinion of others that the sweet corn will sour quicker than the ordinary corn. I feed about 6 pounds of clover and 8 pounds of wheat bran and 30 pounds of silage.

Q.—Have you ever estimated how many pounds of corn there are in 30 pounds of silage?
Mr. Goodrich.—No, sir.
Q.—How many tons did you get per acre?
A.—It made 16 big loads to the acre, and I think that means about 16 tons.
Q.—How many bushels would that field have given you?
A.—It would have yielded about 50 to 75 bushels per acre of ear corn.

Q.—Would you rather have Indian corn or Kafir corn for silage?
A.—I would rather have Indian corn than Kafir corn. I think that most of our corn is put into the silo too green. I would rather have it too ripe than too green.

Q.—Do you tramp your silage?
A.—Yes, sir. It is also advisable to keep it well tramped on the outside and keep it higher in the middle than on the outside; then it will not settle toward the middle and draw away from the outside.

Q.—Does freezing hurt it?
A.—I do not think that it does; the silage is always warm.

Q.—Do you cover your silage?
A.—No, sir; this year we just put some oats on top and there are several inches of loose stuff on top of that; the cheaper this stuff is the better. Next to the outside of the silo, it was spoiled down two or three feet.

Q.—How many years have you used silage?
A.—This makes 7 years.

Q.—How much did your silo cost?
A.—About \$125 and holds 80 tons.

Q.—How many head of stock do you feed?
A.—I am now feeding 21 cows and we are feeding some to the hogs and horses.

Q.—Does the silage physic the cattle?
A.—It is inclined to do that, if it is fed too heavily. My cows are small and so I only feed them 30 pounds each of silage per day. Large cows will eat more without harm, and some of them will eat as much as 50 pounds per day.

Q.—How many acres of land does it take to produce the amount of corn you use in your silo?
A.—About 7 acres.

Q.—Would you make any change if you were going to build a new silo?
A.—No; this kind pleases me as well as any.

Q.—Did you have a practical man to build it?
A.—No, sir; I had a common carpenter and had to explain to him how to build it.

Q.—Have you an idea that if that corn had been carefully cut and shredded it would have carried your stock through the winter in the same manner as it would if put into the silo?
A.—I have never tried that.

Q.—Does the acid in the silage hurt the teeth of the cow?
A.—I have never had any trouble with it in that way.

Q.—If you were going to double your capacity would you have two like the one you now have or would you build one double the capacity of the one you now have?
A.—I would rather have two silos; for I could then use one in the summer during the dry season.

Q.—Have you ever had any silage kept over?
A.—No, sir; we had ours all fed out last year by the 4th of May.

Will Wheat Production Decrease?
Now and then some smart statistician sits down and figures out that wheat-raising in the United States must become a thing of the past; that it is bound to sink to a point of minor importance in the scale of agricultural effort. They try to make us believe that the large volume of wheat we have been able to pour into the market of the world was due primarily to new lands that we have been constantly opening up, and that the moment we reached the limit of these lands our volume of wheat would begin to shrink. But we do not thus read the signs of the times. We can but admit that if the pioneer method of farming were to remain the result predicted by some would probably come about. The plan of skimming off the ready plant food of the soil in the shape of grain was the natural one for the pioneers to follow; but the pioneer movement being ended, new methods are coming in. These new methods have more in store for the wheat-raiser than he now dreams. Not only is there being made

an improvement in the soil condition in which the wheat must grow, but there is being made also a vast improvement in the wheat seed. Many of our experiment stations are conducting, year by year, experiments to ascertain the productiveness of different varieties of wheat, and they are obtaining some remarkable results. They find that, under identical conditions, some varieties yield far in excess of others. The general adoption of these improved varieties means a constant and yearly increase of the total crop. Moreover, varieties are being tested for their rust-resisting qualities, and some appreciable advance is being made. The losses from rust will ultimately be prevented, and that will mean another great increase.

But more than this is the revolution that is going on in the soil conditions in which wheat is being produced. Land that has been exhausted by long years of wheat after wheat is being rejuvenated by well-planned rotations, in which wheat comes in once in four or five years. Instead of finding a soil in which the available plant food has been exhausted, it finds a soil enriched by the decayed roots of the legumes and other crops that have preceded it. It is true that this kind of farming is being adapted but slowly, but its progress is being ever accelerated. The scientific handling of the wheat crop is bound to become universal in this country. There are fewer "clod-hopper" farmers than the uninformed public supposes, and our farmers are being stirred to new and better things. We raise about thirteen bushels of wheat on an acre, taking the country as a whole, while more than double that average is being raised in England. We will certainly see the time when the average yield of wheat in this country will at least parallel that of England. That would mean a crop in this country that would make our hitherto big crops look small. Wheat cannot be dropped from our rotation for a number of reasons other than the profit in the crop, and is certain to be in the future, as in the past, one of America's great money crops.

Broom Corn Millet.

Yearbook of the Department of Agriculture for 1898: In the United States the term "broom-corn millet" is at the present time generally applied to this old world grass (Panicum millaceum). It is the common millet of Europe, where it has been cultivated for centuries. A "millet," regarded by most authorities as this species, is mentioned by nearly all the early writers on cultivated plants, and they seem to have been extensively used as a grain in ancient times. It was used by the Swiss lake dwellers of the stone age, and has been found in the remains of the lake dwellings in Italy. The nativity of this millet is uncertain. Although it grows spontaneously throughout southern Europe and many parts of Asia and Africa, there are apparently no really authentic cases of its having been found in a wild state. All the early records speak of it as being cultivated. Some think it originated in India and others favor Egypt and Arabia. It is grown at the present time not only in India, but in China and Japan, as well as throughout southern Europe and elsewhere in the Mediterranean regions and north to central Europe. Although introduced into the United States many years ago, it has never been extensively grown over any large extent of territory, and at the present time is much less extensively grown than the foxtail millets. It has not met with favor in the South, but in the North-west is valued highly because of its ability to mature a crop of seed in the short dry season so often prevailing in that region, thus serving to some extent as a substitute for corn.



FIG. 27.—Broom-corn Millet: a, b, c, views of the spikelet and chaff; d and e, two views of the seed.

Washington the Ideal Commander.
Washington, a great commander, had the genius for getting all that was best out of the men under him, but the work of organizing and disciplining the army at Cambridge was the least of the troubles which confronted him when he faced the situation at Boston. Moreover, he knew all the difficulties, for he not only saw them, but he was never under delusions as to either pleasant or disagreeable facts. One of his greatest qualities was his absolute veracity of mind; he always looked a fact of any sort squarely in the face, and this is what he saw when he turned to the task before him.—Senator H. C. Lodge in Scribner's.

Composition for House Roofs.—One measure of fine sand, two of sifted wood ashes, and three of lime, ground up with oil. Mix thoroughly and lay on with a painter's brush, first a thin coat and then a thick one. This composition is cheap and strongly resists fire.

The Weeder.

The relation between agricultural manufacturers and producers is a somewhat anomalous one. Competition has been so keen that instead of simply following out the wishes of their customers, implement-makers have been forced to anticipate them. Manufacturers have not only been obliged to keep pace with modern methods of intensive agriculture, but have had to make themselves better farmers than many who buy their goods.

A tool that well illustrates the point in question is the weeder, which unites the qualities in a modified degree of two or three earlier implements. It is a harrow and cultivator combined, but with a flexibility and adaptability possessed by neither of those predecessors. These characteristics make it an almost ideal implement for the shallow and continuous cultivation so necessary to the conservation of moisture, and its adjustability is such that it can be adapted to any crop.

Agriculturists are agreed that the only economical way to destroy weeds is to kill them in infancy, which can be done by stirring the soil; but until the weeder was invented this meant back-breaking labor with the hoe, because the old-fashioned harrows were liable to tear out the crop along with the weeds.

The weeder can be so set that only the surface of the soil is involved. This makes it of great advantage where planting is followed by heavy rains that pack the soil and form a crust through which it is difficult for the young plants to penetrate. It may be used to break up the surface, and the rapid growth which such culture encourages well repays the farmer for the extra labor, and besides by so doing he destroys the germinating weed seeds before they have a chance to compete with the crop.

It has been demonstrated that by the use of the weeder and cultivator a model corn crop can be grown without a stroke of hand labor. In central Illinois, where corn is the staple product, such tools are at a premium.

In the cultivation of sugar beets, onions and crops of a like nature that have heretofore demanded much hand work in the way of weeding, the weeder is equally at home. Its teeth can be shifted or taken out, and this makes it adjustable to rows of any width.

Prof. Goff of the Wisconsin Experiment Station has testified to its value in the potato field and strawberry bed, where it rarely injures young plants. For this reason he considers it preferable to the heavier, more clumsy smoothing harrow.

Orchardists in Michigan and elsewhere have found the weeder their best friend. Mr. A. Morrill of Benton Harbor, who grows peaches extensively, reported to the Farmers' Review two years ago that he would not know how to "keep house" without it, and that he used it more than any other implement on his farm to keep the soil friable and reduce weeds in his orchard.

The weeder has also been used in wheat fields with great success. Prof. Goff likewise recommends its use in preparing a seed bed for plants that require a thoroughly fined and leveled surface, as onions, carrots, parsnips and the like.

Manufacturers do not claim that the weeder works as well in stony or heavy clay soils as it does in prairie loam, but that could not be expected of an implement of its light, delicate touch. It might well be called the "iron hand," yet that term would not convey a fair idea of the flexibility of its long steel fingers. It necessarily possesses the defects of its virtues, but in soils for which it was made and work for which it was designed it is without a rival.

Thorough Corn Culture.

To the Farmers' Review: "I will say that I entered the contest for largest yield per measured acre of corn at Illinois State fair, and am glad to say I won one of the prizes, and now, perhaps, my method of cultivation to produce 155 bushels of corn on a single acre of ground will be of interest to the many readers of the Farmers' Review. During the winter of 1899 I spread fresh manure and refuse from my cow stables over the ground. After the soil became in condition for breaking I broke it 2½ inches deep, and then harrowed it four times and also drew a clod crusher over it, thus pulverizing it up very fine, as soil in this condition retains its moisture much closer to the surface. On May 16 planted white pearl corn 3½ feet apart in rows and 18 inches apart in hills, two grains per hill. After the corn had root sprouts one to two inches in length I harrowed the soil again; and again when the corn began to show through the soil. It was then left until it was six or eight inches in height, then plowed deep, bringing the soil to the corn. The next two plowings were very shallow, just keeping the soil loose and mellow on top. The suckers were all removed from the stalks and only producing stalks left. This corn was perfectly free from weeds. Keep your corn clean and notice the increase in your corn yield. A foul field is a representation of something "wanted." White pearl corn is a variety that is of small cob, deep grain and a quality noted for its great weight. This corn is of pearly white in all sections of the grain, hence the name; it is a great yielder, an early variety and full of oil, hence the weight. It is firm and compact on cob, 23, 1899. If any reader would like to ask any questions write and ask them

and I will favor you with an answer to the best of my ability."—Edw. Burroughs, El Paso, Ill.

Varieties of Broom Corn Millet.

Year-Book Department of Agriculture: The different cultivated varieties of broom-corn millet vary more or less in their habit of growth and character of the panicle or "head," but the chief distinction lies in the color assumed by the mature seed. Three rather distinct types are recognized, white, yellow and red. These may intergrade more or less. The red sometimes becomes a very dark brown or almost black. The general color of the growing plant varies considerably in the different varieties. Plants from the yellow seeded varieties are usually



FIG. 28.—Japanese Broom-corn Millet.

light green in color, while those from the red-seeded sorts are more often tinged with red, usually in proportion as the seed is light or dark red. The white-seeded varieties seem to be the most robust growers, as a usual thing, than either the yellow or red-seeded ones, the most productive being the Japanese white. There are but two of the darker or red-seeded varieties that have come into much prominence in this country. They are the Red French and the Japanese Red (illustrated here).

The large coarse-growing varieties are valuable for silage and may be used advantageously in the silo where corn cannot be successfully grown. The forage does not appear to have the laxative and diuretic action upon the animals eating it produced by the foxtail millets, and there are no harsh, irritating beads. However, objections have been made to it on account of the abundant growth of stiff hairs on the leaves and stems. The yield of forage is, on the average, less than may be obtained from the other millets, but on account of the relatively short season required for its development broom-corn millet may often produce a crop when the others would not. The yield of seed is large in proportion to the size of the plant, 50 to 60 bushels per acre being frequently reported from the northwest.

The Legumes.
A bulletin of the Tennessee Experiment Station says: Nitrogen in legumes is chiefly in the form of proteins, which make meat and milk and are the most valuable elements of stock feeds. All the other hays and grains, like corn, are deficient in proteins and need to be supplemented with legume hay, or peas, cotton seed meal, or soja beans. Clover, pea vine and alfalfa are the best of all hays for feeding stock, especially milch cows, growing stock and working animals, because they contain an average about twice as much protein as hay from grasses, and are worth one-fourth to one-third more for feed than common hay. Supposing timothy to yield two tons of hay to the acre and cow-peas three tons, we get the following comparisons for one acre:

| | FERTILIZING MATERIALS. | | | | |
|---------|------------------------|--------------------|-----------|----------|--------|
| | Nitro- gen. | Phos- phoric Acid. | Pot- ash. | Worth. | |
| Timothy | .25 | at 12c | 10 at 5c | 18 at 5c | \$4.40 |
| Cowpeas | .58 | at 12c | 15 at 5c | 40 at 5c | 9.72 |

FOOD MATERIALS.

| | Protein. | Carbo- hydrates. | Fats. |
|---------|----------|------------------|-------|
| Timothy | 118 | 1500 | 50 |
| Cowpeas | 500 | 1700 | 87 |

We see, thus, that legumes furnish three to four times as much protein and more carbohydrates and fats than common hay. They contain three times as much nitrogen and twice as much potash. This nitrogen is derived from the air and removing it does not deplete the soil. The best plan is, thus, to feed leguminous plants and return to the soil the manure, which will still contain four-fifths of all the fertilizing elements. As nitrogen of the air is the cheapest source of nitrogen for plants, so it is the cheapest source of protein for animals. Soiling is a good plan for dairymen. Save the manure.

Grow more legumes. They furnish the cheapest manure for the soil and the cheapest food for stock, because they obtain from the air the nitrogen necessary for plants and animals, which costs 12 to 15 cents a pound.

Planting Corn for Silage.—The Michigan experiment station bulletin says: For the silo the corn may well be planted in drills about three and a half feet apart and with the kernels from two to six inches apart in the row. In a very wet season a heavier crop may be harvested from plots drilled with a grain drill, every tube sowing, but the greater yield of protein and other nutrients was found in our experiments to be in the crop planted with less seed per acre.

Married women are untiring match-makers. Is this charity or revenge?