

seen mangels sown on the flat harrowed to good advantage when well above ground. The question may be worth discussing whether the same principle may not be profitably applied in the case of cereal crops sown in the spring. If used before the land has got too dry, a weeder will do this work better than a harrow. This simple implement is used in the West, we understand, with good results, and has been employed, to some extent, in Ontario, with marked benefit on clay-loam soils. Mangels may be sown on the flat and cultivated with this and only two or three strokes of the scuffler, the weeder being used after each rain, lengthwise of the rows, crosswise and lengthwise again with a tooth removed immediately over each row. It is also a splendid thing to use on grain crops, and in corn. When used by a careful man, it does an astonishing amount of good at nearly all stages, with incredibly little injury to the crop. One should be on every farm. We shall be glad to hear from any of our readers who have had experience in this practice, or to have their opinion of its practicability.

Name at the Road Gate.

I have been thinking lately how convenient it would be if every farmer would have his name painted on a board and nailed up at his road gate. Could you not agitate this, and in some way bring it to pass?

RYERSON OGLE.

[Note.—It is a capital idea. We suggested it in our issue of March 29th. Our columns are open to suggestions.—Editor.]

Permanent Pasture.

W. T. Macoun, Horticulturist of the Central Experimental Farm, writes: "While permanent pastures are not recommended, as a rule, by the Agricultural Department of the Experimental Farms, one of the best mixtures for permanent pasture is made by using 4 pounds each of alfalfa, common red clover, orchard grass, brome grass, and timothy, or 20 pounds in all."

Income from a 67-acre Ontario Farm.

Editor "The Farmer's Advocate":

Reading your remarks, as well as those of your many correspondents, on crop rotation, carries my mind back thirty years ago, when I first took up farming for myself on a rented, run-down farm, in a not very prosperous neighborhood, and on a soil not naturally very productive. I was very young to begin farming on my own account, and a long distance from the paternal roof, and had a very hard up-hill road to go, principally on account of lack of funds and the run-down state of the farm, and the unwelcome advice of the land owner, which ran all through my occupancy in this fashion: "That field ought to be planted to corn, as I have had corn on it for twenty-two years, and never missed a crop." Another favorite expression of the landlord was: "Don't break up that sod field; it pays to cut as long as you can get a sheep's mouthful at a clip." Another injunction was to almost forbid me sowing plaster, as it took so much strength out of the soil by growing such a large crop. Such advice, or, I may say, rebukes, as these I got periodically, and the ideas were just the opposite to what I believed and to the way I was brought up, as my father was considered a good as well as a prosperous farmer. He had a good soil—walnut loam—to begin with, and followed the three-year rotation that your correspondents recommend, with the exception of cutting clover seed off instead of plowing the second crop under. This he did by stimulating the soil by sowing plaster, though to the detriment of the soil, as the old farm speaks for itself. A few years' continuation of this succession will impoverish land, unless one keeps more stock than the farm will feed, and buys large quantities of feed, and puts it back on the land in the shape of barnyard manure, which for all kinds of crops I prefer to any other nitrogen or humus producer, unless it be clover roots. Of the latter, my experience is that the thicker and larger you get them in the soil, the better the next crop, either roots or grain. My practice is to seed every grain crop to clover, about six quarts red clover, one quart alsike and one quart timothy per acre. This always makes a good sod for fall pasture and hay next year, or to plow up in the spring for corn or pea crop. If left for hay, cut but one crop, and pasture balance of season. Pasturing seems to develop the clover roots to greater size than the old method of cutting a second crop for hay or seed, thus storing up sufficient nitrogen and humus to grow a first-class crop of corn or peas. This seeding to clover I consider the cleanest and easiest method of manuring the ground, as it seldom exceeds two dollars per acre for the above mixture, and we will have to invent some cheaper way of drawing manure if we are to get an acre covered for that figure, even if we have it not far from the needy field.

Clovering is the keystone to all good farming in this part of the Dominion, and it has brought

my run-down sandy-and-loam farm up, till it produces every year an abundant crop, heavier each year than the year before. It might be interesting and inspiring to some—and, I trust, not discouraging to any—to know what can be produced on a small farm of 67 acres in a single year, here in East Elgin, Ontario. I sold in 1905:

5 hogs (fat)	\$ 56 50
3 pure-bred calves	190 00
1 veal calf	5 00
76 lbs. wool	18 24
1 sheep (fat)	6 00
1 lamb	12 00
1 grade heifer	14 00
6 acres canning peas	157 19
5 acres canning corn	139 00
5 cows, checks from cheese factory	323 33
	\$921 26

In addition to the above, we sold some apples, potatoes, chickens, eggs, berries, milk, butter and cabbage, which I have not the exact figures of, but which must aggregate nearly \$50. Also the partial growth of four head of grade two-year-old cattle, sold for \$102; and prize money on roots and stock, \$68.15.

We also produced on the above farm:

24 tons hay	\$120 00
536 bushels oats, at 30c.	160 80
128 bushels wheat, at 80c.	102 40
2 acres peas not threshed	50 00
100 bushels roots	10 00

The above amount, with the growth of five registered Holstein heifers, and six Leicester ewes, and two colts, would be increased fully \$150 if sold. In conclusion, I might state we have as many colts as a year ago, twice as many ewes and lambs, twice as many cows, and expect twice as many pure-bred calves. We have as many young cattle, and one more hog and three more pure-bred pigs. So, with anything of an ordinary year, we will be able to duplicate last year's income easily. G. H. CAUGHELL & SON.

Elgin Co., Ont.

Lightning Rods.

I notice in your issue of March 15th an arrangement for a homemade lightning-rod. I have been a subscriber to your valuable paper for several years, and three years ago I had copper rods erected on all my buildings. I could, at the time, have had an iron-wire rod at a cheaper price erected on my buildings, but iron wire has an 8-per-cent. conducting power, while copper has 100 per cent. (a heavy lightning bolt is estimated at a good many thousand horsepower). My rod is a five-eighths copper cable rod, and I often think it is not capable of carrying off a very heavy stroke of lightning. I do not see why electric-light companies and electric-car companies do not install iron wire for conducting their electricity, in place of the expensive copper wire they use, if the iron wire would answer the same purpose. In my opinion, an iron-wire rod would attract the lightning, but could only carry off 8 per cent. of the electricity, leaving the 92 per cent. to smash into the building, and, therefore, doing greater harm to the building than no rods at all. I also think a lightning-rod ought to be put up by someone who has had experience in the business, and not by someone who may make a trap to lure their own buildings.

AN OLD SUBSCRIBER.

Ontario Co.

In the year 1897, one of our subscribers, Mr. T. Baty, of Middlesex Co., Ont., having rodged his barns himself with cable made of galvanized iron wire twisted together, sent us an account of what he had done, and asked us to get the opinion of experts on the merits of the rod he had constructed. We wrote to several, and the replies received were all favorable, some of them warmly commending our correspondent for what he had done. The Provincial Inspector of Insurance, Mr. J. Howard Hunter, went so far as to say that if our farmers generally would follow Mr. Baty's example, the deplorable loss which occurs every year by lightning fires would soon be at an end. Among other authorities consulted was Mr. John Dearness, now Vice-Principal at the Normal School, London, who gave a rather cautious endorsement. In the same year, however, Mr. Dearness met, at the meeting of the British Association in Toronto, Prof. Lodge, of Liverpool (now Sir Oliver Lodge), the recognized authority in England on lightning-rods, and asked his opinion on the fence-wire homemade rod. Prof. Lodge said that a building rodged as had been described, would be well guarded. He further said that well-galvanized fence wire made an excellent conductor, really better than those made of copper or its compounds, in that it did not rust, while these oxidized rapidly, so that they were quite black and sooty-looking in a short time. Our authorities for recommending rods of galvanized iron wire are, as will be seen, no mean ones. Sir Oliver Lodge is now recog-

nized as one of the leading electricians of the world.

It is believed that when lightning is being conducted along a rod, the current scarcely enters the body of the metal, but is carried off on the outer surface chiefly. What is needed is a bright surface, and plenty of it. The superior conducting power of copper is only in small part available for a lightning discharge. Copper has about eleven times the conducting power of iron, but the statement that an iron conductor will carry only 8 per cent. of an electric current, while copper will carry 100 per cent., sounds like the talk of a lightning-rod agent. As we understand it, an iron wire eleven times the weight of one of copper is required to convey a given amount of electricity, so that if the weight is in proper proportion, the conducting power will be equal. This matter of weight no doubt has a good deal to do with the use of copper instead of iron for electric wiring. Increased weight would mean much-increased expense for poles, etc. This objection does not apply to rods on buildings, however; but if a person really believes that copper would answer better than iron, there is no reason why he should not himself buy and twist the wire. We think that he would find it more than eleven times as costly.

In regard to the wisdom of having men of knowledge and experience erect lightning-rods, there can be no two opinions, but the average lightning-rod agent knows as little and cares much less about the proper construction of them than the farmer whom he dupes. As a rule, to which there are no doubt honorable exceptions, of all the sharks who have preyed upon the public, the lightning-rod peddler has been one of the most unscrupulous and extortionate. That is one of the chief reasons why there are not a greater proportion of buildings protected by rods to-day.

In England, where it has become the fashion to rod buildings by tacking on a ribbon of copper, the objection that our correspondent urges against the use of iron wire has been brought against the copper ribbon, viz., that the attractive power exceeds the power of conduction, and buildings have been smashed in consequence. Very much depends on having good ground connection, and it is at this point that rods put up by agents have been most defective.

THE DAIRY.

Developing a Cow.

When we stop to think that all kinds and breeds of cattle undoubtedly originated from the same pair that the good Lord created at the beginning, we begin to realize what an artificial production the cattle of to-day are; how that environment, conditions and tastes of men have developed them along different lines, until to-day we have many different breeds, with characteristics peculiar to each breed, and each breeding true to the type, color and conformation of its own peculiar breed. Of course, this was the work of ages, and requires a great deal of skill, patience and perseverance; but it shows what can be accomplished if we have a definite aim in view.

Cows, like men, are good or bad, oftentimes because of their environment, bringing up, and education. We look for and expect men to be good, if brought up in good and religious families and communities. I have often heard it said, "give me the first six years of a child's life, and I will tell you with a great deal of certainty what the future of that child's life will be." So I believe that the conditions under which an animal is reared determines, in a large measure, her future usefulness or uselessness.

As with men, the parentage is of great value, and we look for and have good reason to expect cows to be better cows from a long line of productive ancestry; so this, then, is the stepping-stone in the developing of a dairy cow.

A profitable cow, in my estimation, is one that can produce in a year, or, still better, a series of years, a good maximum yield of milk and butter, at a cost that will yield a good profit to her owner, and also produce a strong, healthy calf each year. This ought to be one of the requisites in securing the sire for the head of the herd, to not only see that he is from a productive strain, but from a family of regular breeders, because he not only reproduces his good qualities, but often intensifies his weak points as well. See that he is as near perfect in conformation and dairy make-up as possible, for, with all the care we may exercise in mating our animals, some faulty ones will develop that we had not figured on; so if we have looked well to this end, to see that the sire is right, and that the dams we are to use for foundation are right, we have gone a long way toward their development.

I recently heard of a breeder that, when the little heifer calf came into the herd, it was examined, and if it did not have so many developed teeth, and the udder and teats just as well developed, it was knocked in the head. I want to say that, if we had practiced such a method in our herd, we should have slaughtered some of