bare living, but who would not prefer lying down in a grave, poor, but owing no man anything, than to lie down therein owing money which can never be paid?

And, if we gauge prosperity by average wealth, here, again, the comparison is largely in favor of the farmer. The average wealth of the farmer is far greater than that of men in other callings which give employment to the many. In a certain town in the country, we were told not long since that of $600,000 deposited in the banks, no less than $500,000 were owned by farmers, and represented earnings made upon the farm.

And, then, think of the character of the work. It is certainly pleasant, except at certain seasons when the weather is adverse. And we know very well that as there is more of day than night, there is more of sunshine and brightness than of shade and darkness. This work is performed very much of the time in the open air, and beneath the glorious sunshine of heaven. In the bright days of spring, and in the early days of autumn, what other calling under heaven can furnish employment so delightful? True, the farm has its stormy days, and it has its troubles, but what calling under heaven has not? And, as a rule, the farmer is not compelled to work in the storm. He is not like the motorman on the street car, the engineer on the railway, or the delivery man of the house of merchandise. He is not bound to go, rain or shine, but he is in a position to control his own work; hence, when the weather is forbidding, he may work in comfort and indoors.

Nothing has yet been said about the opportunities furnished for study and experiment. The opportunities for these will never cease on the farm. They are like the story that will never end. So that, in addition to making a living, there is a chance for every man upon the farm to immortalize himself by working out one or other of the ten thousand problems that are yet unsolved. In the face of these truths that have been said, and of the very many that have not been said, though of kindred import, why should young men so much desire to get away from the farms?

Methods of Applying Manure to Fields.

In applying manure to the field, three methods are pursued: (1) The manure is placed in larger or smaller heaps over the field and allowed to remain some time before being spread; (2) it is broadcasted and allowed to lie on the surface for some time, or plowed in immediately; and (3) it is applied in the hill or drill with the seed.

The first method is objectionable because it increases labor of handling and chances of loss by fermentation and leaching, while uniform distribution of the manure is not likely to be secured. The spots on which the heaps stand are strongly manured with the leachings of the manure, while the rest of the field receives the coarse parts of the manure largely deprived of its valuable constituents. Another disadvantage of this method is that proper fermentation is interfered with by the leaching out of the nitrogenous matter and the drying action of the wind. The practice of storing manure in large heaps in the field is subject, to some extent, to the same objections. If, however, the heap is not allowed to lie too long, and is carefully covered with earth, the loss may be greatly reduced.

Spreading the manure and allowing it to lie on the surface should be practised only on level fields where there is no danger from surface washing. It has been claimed that when manure is spread broadcast and allowed to lie on the surface there may be a serious loss of ammonia into the air, but experiments have shown that, in case of properly prepared manure, loss from this cause must be very small. On a leachy soil there may be a loss of soluble constituents in the drainage if the manure is spread a long while before the crop is planted, but, in ordinary practice, the loss from this source is also likely to be insignificant. In this method of application the fertilizing constituents of the manure are uniformly distributed, the liquid portion being gradually and thoroughly incorporated with the soil particles. One serious disadvantage, however, of the method is that the manure, before being plowed in, is leached, to a large extent, of its soluble nitrogenous compounds, which, as we have already observed, are necessary for fermentation, and that, for this reason, it does not so readily ferment in the soil. It is highly advisable, therefore, in the case of light or sandy soils, not to follow this practice, but to plow the manure in as soon as spread.

As to the depth to which it is advisable to plow the manure in, the general rule should be observed that it should not be so deep as to prevent the access of sufficient moisture and air to insure fermentation and nitrification and to permit of rapid washing down of nitrates to the drain. In very compact soils the depth should not exceed four inches. In light soils this depth may be considerably increased, although in such soils there is more danger of loss by drainage than with heavy clay soils.

Application in the hill or drill is useful where the supply of manure is limited and the full, immediate effect is desired. For forcing truck crops this method is especially valuable. Well-rotted manure is best suited to this method of application. It has been claimed, however, that manure applied in this way sometimes injures the appearance of root crops, especially potatoes, by increasing the amount of scab.

The so-called parking system, or feeding animals on the land, is a method of application which has many advantages, but the distribution of the manure by this system is irregular, and, if practised in autumn or winter, the manure is subject to loss by drainage.

The application of liquid manure has certain obvious advantages, and is largely practised, especially in Europe. Manure leachings is a quick-acting, forcing manure, and is especially valuable for grass. The expense of cisterns for collecting the leachings and the trouble of hauling and distributing, together with the care which must be exercised to prevent loss of nitrogen from the readily fermentable liquid when it stands for any length of time, render it doubtful whether this method is practicable, except for special purposes and under peculiar conditions.

As to the rate at which manure should be applied, no fixed rules can be given. The rate will depend upon the character of the soil, the quality of the manure, the nature of the crop, and the frequency of application. Cold, moist soils should be manured lightly and often. Thaer, a German writer, states 17 to 18 tons per acre to be an abundant application, 14 tons good, and 8 to 9 light; other German writers consider 7 to 10 tons light, 12 to 18 tons usual, 20 tons (or more) heavy, and 30 tons very heavy. Stephens suggests 8 to 12 tons for roots, and 15 to 20 tons, supplemented by commercial fertilizers, for potatoes. Sir Henry Gilbert considers 14 tons per acre, annually, excessive for wheat and barley. In New England the rate varies from 6 to 12 tons. Twenty tons is a frequent application in New Jersey, as well as in other regions where truck farming is practised. As a general rule, it is more scientific to apply small amounts of manure frequently than to apply large amounts at longer intervals.—*Bulletin of U.S. Department of Agriculture.*

Facts for Canadian Farmers.

The American agricultural papers are well supplied with standing advertisements of dealers in Canada hardwood ashes, writes W. F. Massey, of the North Carolina Experiment Station, and to us at a distance the question occurs, "Where do all these ashes come from?" Not from the marts of trade, because the fact that they are ashes indicates a large destruction of the products of the soil of Canada. They must come from the farms of Canada; but one can hardly understand why the Canadian farmers should thus sell for present advantage the fertilizing elements from their soil, which, sooner or later, they must buy back at a much greater cost; for, although the Canada ashes cost the consumer at a distance far more than their percentage of potash is worth, we are told that the price received by the Canadian farmers for these ashes from the collectors is very low. We once bought a carload of these ashes, which analyzed much higher than the samples now offered for sale. They were delivered to me for $15 per ton. With the freight taken off, the actual price paid to the importers was not over $5 per ton, at which price the actual potash they contained was cheap enough. But if the importers were satisfied to get this price, for how little a sum must the Canadian farmer have parted with the fertility of his soil, for the expense of the collection and storage and importation of these ashes must be very heavy. So I have figured out in my mind that the Canadian farmer got not over two cents per pound for the actual potash sold in the ashes, to say nothing of the lime parted with. Now, when he finds his cultivated soil getting deficient in potash, as he inevitably will, he must buy back that potash at four and a half to five cents per pound. At the same time, the purchasers of the Canada ashes, as now sold at a guarantee of five per cent. potash, are paying exceedingly dear for the whistle. It looks to me like a hard bargain for the farmers on both sides of the line. The farmer on this side can buy his potash in the form of potash salts much cheaper than in the ashes, and the Canadian farmer is parting with his potash for less than half what he or his children must pay to get them back. In selling off these mineral elements of fertility—lime and potash—the farmer sells what he *must* buy back in some shape. We lose enough of these matters in the crops we sell, which is unavoidable; but when we add to this the sale of the products of combustion, by-products, that should go back to the land, we are burning our candle at both ends, and will reach the point of exhaustion sooner. Canadian farmers, as we look at it, cannot afford to sell these ashes at the price they are paid for them, and American farmers can buy their potash at vastly cheaper rates. Out of the difference the importers grow rich, while the farmers pay the bill. While we have had good results from the use of these ashes, we have become satisfied that we got the results at a far greater cost, even considering the value of the lime, than we could have gotten the same results by purchasing lime and potash in other forms. When these things are transported by rail long distances, the freight becomes the chief item in the cost. We once freighted ten tons of ashes, at a cost of $80, and got 1,200 pounds of actual potash (more than the average amount). We could have freighted 10,000 pounds of potash, in the shape of muriate, from a nearer point for half the money. And this is the very point we should like to impress upon the producers of potash on the other side of the Atlantic, the immense saving of cost of potash to the American farmer living far from the sea coast by relieving him of the necessity for freighting so much useless material to get the potash he is after. They should send us more of the concentrated article, for the freight over the Atlantic is but a small part of the inland freight in very many instances.

Fertilizers on Potatoes.

The Ohio Experiment Station has begun a series of experiments in which the three crops, wheat, clover, and potatoes, are grown in rotation, with and without fertilizers of different kinds. The experiment is being carried on both at the central station, in Wayne county, and at the northwestern sub-station, in Fulton county, and was begun in Wayne county in 1894 by planting potatoes on land that had been two years in corn, following grass, and on newly-cleared, yellow sand of the oak opening region in Fulton county.

The soil on which this test is being made at the central station is a light clay. It was thoroughly drained in the fall of 1893, with three-inch tile drains laid thirty-six feet apart. The planting was done in good season in 1894, and the fertilizers applied broadcast. The potatoes started off well, but their growth was seriously retarded by the excessive drouth of the summer.

The general results of the experiment were that, while partial fertilizers, containing only one or two of the three essential elements of fertility, produced some increase of crop, that increase was irregular and uncertain; but, when a complete fertilizer was applied, there was an increase of crop in every case, and the increase rose regularly with the quantity of fertilizer applied, the largest yield, and in Wayne county, the largest net profit, after paying the cost of the fertilizer, coming from an application of 480 pounds of dissolved bone black, 320 pounds of nitrate of soda, and 300 pounds of muriate of potash, a total of 1,100 pounds per acre, costing about $20. This application increased the total yield by 65 bushels per acre over the total yield of the unfertilized plots adjoining.

On the yellow sand in Fulton county, where the unfertilized yield was much smaller than in Wayne, the increase from the fertilizer was much smaller than on the better land in Wayne, and where incomplete fertilizers were used it was still more irregular, in several cases failing to pay the cost of the fertilizer; but the complete fertilizers paid their cost in every case, with potatoes at 60 cents per bushel, the largest total increase here being 47 bushels, from the same mixture that produced the largest increase in Wayne.

This mixture carried, approximately, 50 pounds of nitrogen per acre, equivalent to 60 pounds of ammonia, 75 pounds of phosphoric acid, and 150 pounds of potash.

It appears that, in this test, nitrogen was less essential than either phosphoric acid or potash, and it is probable that, if the land had been a clover sod, the amount of nitrogen might have been very considerably reduced. Phosphoric acid appears to produce equally good results, whether applied in the form of