the appearance of the orops tends so far to corroborate previous experience. The mineral manures—sulphate of potash, sulphate of soda, sulphate of magnesia, and superphosphate of lime—still seem to be of no use by themselves, for the plots that have had no manures of any kind for ten years carry quito as good-looking crops of wheat and barley. But in con junction with nitrate of soda or salts of ammonia, the mineral manures are of marked service. Continuous dressings of salts of ammonia alone give fair crops, those from dressings of nitrate of soda alone being slightly stronger and darker in colour, indicating that the nitrate of soda acts more quickly.

Certain plots are dressed one year with nitrate of soda or with ammonia salts, the following year they get no manure, and the next nitrate of soda or ammonia salts again, and it is intracting to note 'hat the with holding of the nitrogenous manure for one year it once brings down the crop to the level of the plot that has had no manure for ten years—thus teaching that these nitrogenous manures exhaust themselves in one season. This result is more strikingly shown on the wheat than on the barley plots.

On the plots dressed with farmyard manure the slow action and lasting properties of this manure are well demonstrated. The plots which were for several years dressed with farmyard manure, but have had no manure of any sort since 1881, carry almost as good looking crops as those which have been getting dung all along—certainly much better than the unmanured plots, showing that the manure applied prior to 1881 is still influencing the crop.

The crops generally on the experimental field are far from promising. The land, as usual, is in as perfect a condition of tilth and cleanliness as could be wished, but the backward season has told seriously upon the grain crops, which at the beginning of June last year were quite as rank as they are today. The experiments on clovers and other seeds were explained by Mr. Carruthers; and in the afternoon the Park Farm, the Abbey Gardens, and Sculpture Gallery at Woburn, kindly thrown open by the Duke of Bedford, were visited by the excursionists.

## The Manurial Value of Ashes.

Professor R. C. Kedzie, chemist of the Michigan Agricultural College, in estimating the value of ashes, calls potash worth five cents a pound; insoluble phosphoric acid, five cents a pound, and the mixed carbonates of lime and magnesia, ore-eighth of a cent a pound, because these materials would cost these sums if purchased separately at wholesale rates in the open market.

When we consider how large an amount of vegetable matter is represented by a small amount of ash, the value of wood ashes for manure becomes evident. Thus only ten pounds of ash remain from the combustion of a cord of hard wood, and only five pounds from a cord of soft-wood. One hundred pounds of ash represent the mineral matter of eighty-five bushels of wheat, eighty-five bushels of corn, or a ton of timothy hay. But small as is the amount of ash, it is still indispensable for the production of these erops, and must be present in the soil in available form before profitable cultivatior is possible.

Let it not be supposed that the ash in all crops is identical in composition. The ash of each class of plants has a compo silion peculiar to itself, differing in some respects from that of other classes; yet there is a similarity in the ash of all cultivated plants. When the ashes of vegetable substances are served up for any plant by mixing them with the soil, such plant does not of necessity order every dish on the bill of fare, but selects such materials and in such quantities as are adapted to its wants and leaves the balance for some other occasion.

The hard-wood ashes analysed by Professor Kedzie were taken from a kitchen stove, the fuel being a mixture of beech and hard maple. In these ashes the potash constituted twelve and one fourth per cent and phosphorie acid six per cent. One hundred pounds were valued at \$1. In answer to a fruitgrower, who asked which he should give preference to for his fruit orchard, dry hard-wood ashes at \$3 per ton, or fine raw bone at \$38, Professor Kedzie replied: "The bard-wood ashes, by all means."

The leached ashes reported on were taken from a tannery, the leaching having been carried as far as was profitable. In these the potash was 1.6 per cent and phosphoric acid 6.8 per cent. Value of one hundred pounds, fifty-two cents.

Soft-wood ashes analyzed were the ashes from the planings of pine, hemlock, fir and basswood lumber, with some soft coal ash mixed in. This product represented the ash from saw-mill and planing-mill furnaces, and containing twelve per cent potash and four per cent phosphorie acid. One hundred pounds are worth eighty-four cents.

Corncob ashes were obtained by burning cobs in the open air. The potash is forty-five per cent and phosphoric acid four and one-half per cent. Value of one hundred pounds, \$2.50.

Tannery ash was obtained from the furnace of a tannery in Lansing, where spent tan and some soft coal were used for fuel. In gathering the specimen an effort was made to exclude the coal ash as far as possible. The potash was two and onehalf per cent and phosphoric acid 1.2 per cent. The prolonged steeping of the tanbark appears to have extracted some of the potash and phosphoric acid. Value of one hundred pounds, twenty-two and one half cents.

In regard to soils most benefited by wood ashes, Professor Kedzie says: "Discarding ashes of mineral coal as valueless for manure, it may be said in general terms that the ashes of wood and of land plants of every kind are of value for manure on every kind of soil which has been reduced by eropping, but the greatest benefit is shown upon sandy and porous soils. On these "light soils" erops of every kind, but especially root crops and corn, will be benefited by a dressing of wood ashes. Fruit-trees and fruit-bearing plants having a woody structure will be benefited by wood ashes."

Thirty to fifty bushels of fresh ashes to the acre will be a full dressing, and three or four times that amount of leached ashes may be applied with permanent benefit.

DR. HOSKINS.

## DAIRY FARMING.

We are glad during the week of the Dairy Conference in Derbyshire to call attention to the very admirable Journal of the British Dairy Farmer's Association, which both herc and there has done and is doing excellent service. For the present we take one point only-the "datum" line for all future calculations which is obtained by the experience of some years. In the number which has recently been issued, Mr. E. C. Tisdall sums up, into one instructive whole, the results of seven sets of returns which have been made at Islington during the seven consecutive years' milking trials. Taken alone, each of these conclusions had a lesson of interest; taken together, they give an insight into the properties of our more prominent dairy breeds, which is of real importance. The milk of 129 cows has been tested, of which 55 were Shorthorns, either with or without pedigree, 42 were Jerseys; 23 were Guernseys; and 9 were cross-breds. The average yield of each Shorthorn cow per diem was 42.89 lbs. of milk; of each Jersey, 27.34 lb. of milk; of each Guernsey, 27.43 lb. of milk; of each cross-bred, 43.53 lb. The average percentage of butter-fat was, with Guernseys, 4.52, with Jerseys, 4.17; with Shorthorns, 3.62, with cross-breds, 3.57.