

called Caterham Valley, in the county of Surrey, within 20 miles of London, the thermometer indicated 1° F. below zero! What is the consequence? The land in preparation for spring-grain was so effectually worked upon, that the clays present a pulverised surface hardly ever met with. The wheat-plant was not injured, neither were the tares nor the clover, as fortunately there was snow enough on the ground to protect them.

The season.—I was in hopes, a month ago, that we were going to have a regular early spring; but the fall of snow on the four last days of March settled the question in the negative. Such weather I never saw during the thirty-two years I have been in the country! The snow is all gone again—here at least—and rain and wind!—such wind!—are struggling for the mastery (April 10th). Still, if the weather were to clear and let the sun do its work, it would not be too late to sow horse-beans. Any time before the end of this month would do. Drilled two feet apart, about $2\frac{1}{2}$ or 3 bushels to the acre, they would pay well on heavy land. They should be harrowed twice, horse-hoed and edge-hoed. In the last of these processes, the man, with a 7-inch hoe, keeps the row of beans between his feet and outs the ground on each side of it with a *chopping-stroke*. I say a *chopping-stroke*, because a *drawing-stroke*, as usually practised, covers up the roots of the weeds, and if a shower follows, they will infallibly shoot again. A man will do an acre a day easily. By the bye, talking of hoeing, a man of my country singled last year, on the Dawes' farm, half an acre of mangels a day, making the acre cost \$2.50—wages are high here: so near Montreal.

Value of roots.—Mr. E. W. Stewart, in subjoined article, sets the value of a ton of mangels, as compared with clover-hay at \$8 a ton, at \$2.36; whereas, in England, where clover-hay is worth, generally £6 a ton (=say, \$30), mangels hardly ever sell for more than \$5 a gross ton, that is to say, whereas, here, clover is worth only $3\frac{1}{2}$ times as much as mangels, in England it is worth six times as much.

Mangels and Sugar Beets.—What is a ton of mangel wurzel beets worth to feed to milch cows, compared with a ton of hay at \$8 per ton, or a ton of bran at \$14 per ton? What is a ton of sugar beets worth to feed milch cows compared with a ton of mangel wurzel beets? J. E. W. *Mt. Morris, N. Y.* [It is not easy to give a satisfactory answer to J. E. W.'s questions—because the various roots fed to stock are given an excessive value for special reasons, such as the favorable effect of succulent food in the winter, promoting health, and also assisting in the digestion of other food. The real food values of fodder beets, sugar beets, carrots and turnips are over estimated, because the water they contain in 100 lbs. is not properly considered. Mangels of fodder beets have about 12 lbs. of dry food in 100 or 240 lbs. in a ton. Good clover hay has about 55 lbs. of digestible food in 100 lbs., consequently there is as much digestible food in one ton of clover hay as in $4\frac{1}{2}$ tons of fodder beets. But the effect of fodder beets as a digester of other food and as a promoter of health, may fairly be considered as adding 25 per cent. to their value and this would make about $3\frac{1}{2}$ tons of mangels as valuable when used with other food, as one ton of good clover hay; and if that were worth only \$8 per ton, this would make fodder beets worth only \$2.30 per ton. 2. Sugar beets contain a larger proportion of carbohydrates in the form of sugar, and for certain purposes this root has an additional value of about 25 per cent. But W. will understand that this question of the comparative value of foods always depends upon the particular foods, considered being used in a well balanced ration.]

E. W. S.—*Country Gent.*

Artificial manures.—The manufacturers of the Stockbridge manures, who are justly proud of the successful use of their fertilisers in the recent contest in potato-growing, speak as follows:

"The reason why the Stockbridge Manures were so successful in this contest and elsewhere is because they are really made of the very best materials, and there is no cheating the plant. Large quantities of unavailable plant food, costing but little, may deceive chemists into giving high analyses and high valuations, but they won't send up the crops. The public may be misled, but the plant never."

Though I do not think that chemists are likely to be deceived in their analyses, I do think that they are sometimes wrong in their valuations. I object strongly to any value being attached to other constituents of a fertiliser than nitrogen, phosphoric acid and potash.

Poisonous residue.—So the theory so thoroughly exploded by the French agricultural chemist Decandolle, some 50 years ago, still survives in spite of Lawes and Gilbert. Here is an instance:

"*Soil exhaustion and analysis.*—EDS. COUNTRY GENTLEMAN—Under the above heading appears, p. 165, an article by Mr. T. B. BROOKS, in reference to a communication from me in regard to clover sickness, in which I am called upon further to explain certain statements. In this communication I had occasion to say, among other things:

2. Because each crop growing on a piece of land leaves a residue that is more or less poisonous to the same crop, and, unless the ground either contains such an abundance of food required by this special plant as to overcome the baneful influence of this poison, or it is otherwise counteracted in the soil, failure is inevitable."

Consider for one moment: at Rothamsted, wheat has been grown without manure, on the same plot, for upwards of 45 years, and, though the soil is only of moderate quality, the average yield to the acre has been throughout more than the average yield of the great wheat-fields of the United States! It occurs to me that the reason why successive crops of the same plant on the same plot do not thrive so as to be profitable is simply because there is not a sufficient supply of plant-food in the soil in a proper state to afford them nourishment.

Chemists' analyses.—There is another difficulty in connexion with the analysis of cattle food: what are malt-combs worth? We feed cows on them largely in England, and, according to Wolff, they ought to be a very valuable addition to any ration, their digestive nutrients being:

| Albuminoids | Carbohydrates | Fat |
|-------------|---------------|-----|
| 20.8 | 43.7 | 0.9 |

In England, they fetch \$22.00 a ton, and are sometimes given to sheep on turnips, especially to the ewe-flock; Stewart values them at \$26.60 a ton, and recommends their use highly. And now comes a large cow-keeper who says: Their total withdrawal from the rations of our herd of cows in full milk, without putting anything in their place, made no difference in the yield of milk!

The question seems to have been referred to Sir Richard Cameron, who, I presume, for I never heard of him before, to be an agricultural chemist, and his reply was, that the disappointing results obtained were probably due to "the nitrogenous materials of malt-combs being in a low state of elaboration." Highly satisfactory, of course, but I doubt very much if all the millions of quarters of malt-combs that have been and still are consumed in England have not had, as a rule, a good effect on the animals that ate them; otherwise, the farmers of that country would long ago have given up their