the dairy, although many good cows have been obtained from crosses with this breed. We do not think that it is possible to find or form a breed that shall combine the properties of the best working cattle, the best milkers, and the best breed for fattening. The first requires the greatest proportion of strength and activity. The second should have less bone and sinew, and the last a still smaller proportion. We have known a cow in very good condition attacked violently with the horn distemper, she had till then been a good milker; when cured she was manifestly weakened and not much disposed for stirring; high feeding failed to make her give anything near her usual quantity of milk, but she showed an uncommon disposition to fatten, and was made extremely fat in a much shorter time than usual.

FRENCH HORSES.

It would be a pity to allow this breed of horses to disappear entirely. They certainly were for many purposes superior to those which have replaced them. They were more compactly formed than the long-legged English horses and much superior to them in strength in proportion to their size, capable of living upon coarser food, and of working steadily with little or no grain. They were the best horses for poor men, for if they were not wanted for some time in summer they would keep in good order on the poorest common. A part of them were very slow, but there were many among them that would leave the long legged horses behind upon bad roads. Having been long bred in the poorest parts of the Province they had become excellent horses for steep hills, bad roads, and scanty pastures. They were necessarily small, for many of them were never housed or fed till they were rising four years old; they procured their living in winter by gnawing upon the grass-land when they could come at the ground, and by picking the hay and straw from heaps of manure when the snow was deep, sheltering themselves in cold storms by huddling together in thickets of Firs. If a person who possesses horses of this ancient breed would undertake to improve them by breeding from the best, and giving them nearly as good feed as is allowed to our common horses, we have no doubt that he would in time form a breed which would be superior for draught and endurance of fatigue to those now in use, and that this breed would command a high price.

A LECTURE ON AGRICULTURAL CHEMISTRY AND VEGETABLE PHYSIOLOGY.

Read at a Meeting of the Gay's River Temperance Society—by its Vice President.

Vegetables of every class and description, from the lofty Pine, to the majestic elm, and the beautiful and stately sugar maple, of our country; down to the humble chickweed or sorrel: are composed of four primitive substances, viz. Carbon. Oxygen. Nitrogen, and Hydrogen.

These substances, the Farmer has continually present to his senses, and though almost countless in the number of their forms, tastes or smell, adopting every shade of colour that exists in the rays of light; *comprehending also the black, with its shades, where those rays are absorbed; and the white, where they are reflected.* These, as I have stated to you are composed of Hydrogen, Oxygen, Carbon, and Nitrogen, and many species of those vegetables, comprehend all those primitive substances; but differ in the quantity appropriated to each. Others again, lack one or more as they differ in quality, these variations causes this almost infinite variety of quality, taste, smell, form, colour, and weight which distinguish the different classes, and orders in vegetation.

Now, my friends, I doubt not but you will be anxious to enquire how I came to know all this; or in other words, how things so mysterious can be known. In order to answer this question, and also to prove that the foregoing assertions are founded on facts which cannot be disputed, I will detail to you the analyses of a maple tree of the forest. You are all aware that charcoal, or as it is termed by the Chemists carbon, is manufactured from wood. I once with the intention of investigating more minutely this subject, filled a boiler with maple sugar wood, covered it with plates of iron, and luted the cracks with clay, which rendered it air tight. I also connected iron tubes with the stoop which conveyed the gas as it was formed into a receiver and condenser, that nothing would be lost; I then put fire into a furnace which gave sufficient heat to change the wood into carbon. As the heat increased, the water which was contained in the wood, became steam, and in this form passed through these tubes into a receiver where it was condensed and became water again. This was effected by applying snow to the exterior surface of the receiver which kept it a low temperature. Next as the heat increased, the oxygen, and hydrogen disengaged, and changed into the gaseous form; these also passed into the receiver, and were condensed in their turn, and produced tar and pyrolignous acid. This latter substance is a strong vinegar which would require five or six volumes of water, to reduce it to the strength of common vinegar. During the latter part of the process, carbonated hydrogen gas issued through the crevices caused by the drying of the luting, and escaped in the form of smoke. By applying a candle to this, a white blaze was formed; this is the same as the gas light, in cities and towns, which we hear so much of. Here we see that at this stage of the analyses we have produced from the maple tree, tar, pyrolignous acid, and carbonated hydrogen gas. But this is only a part of the investigation when we uncover the boiler we find the wood (although a little diminished in size) exactly the same form, not even a splinter of it is altered, and the substance is become (instead of a portion of sugar maple) a mass of pure carbon, with one exception, which I will now investigate. If now when the boiler is opened, and air admitted, and fire be set to the charcoal; the carbon as combustion takes place, unites with the oxygen of the atmosphere, and becomes carbonic acid. This is the only form in which carbon can feed plants, and in this form it enters, both by the leaves and roots. It combines with the water in the soil, and is drawn up by the fibres of the roots; the water evaporating through the leaves and the carbon remains a constituent of the plant. It combines also with the atmosphere, and is taken up by the leaves, which perform the same functions as the lungs of animals, with the exception that the latter retains the oxygen and expels the carbon; but the plants retain the carbon and expels the oxygen. Hence you may perceive, that the carbonic acid, which formed so large a constituent of the plant, enters it both by the leaves and roots. But I am digressing from the branch of the subject which it was my intention to pursue. As I before said, there was one exception to the purity of the carbon in the boiler. I will now explain it. As combustion progressed in the boiler, and the carbon vanished; there remained a beautiful white porus substance, of the same form, and apparently occupying the same space, as the wood when put in the boiler. This substance has resisted all the powers which decomposed all the other constituents of the wood. This white substance is, pure ashes uncontaminated with coal, which gives them that dark shade which we are accustomed to see them in; when coal falls from the fire on to the hearth, you will see it in its p