The pans should be kept carefully clean, and should be scalded before putting the milk in.

The milk should stand till sour in summer before skimming, in order to give all the cream time to rise, and the butter will be none the worse for it. In winter it stands 18 hours before skimming.

The cream is kept in a tall earthenware jar, in a cool airy place, and covered with wire-gauze to keep out the flies.

The cream is churned twice a-week in summer, and every ten days in winter. [We use Fraer's churn.] The cream is always brought to a heat of 62 degrees, before putting it into the churn, by putting cold water in, in summer, and setting it by the fire in winter.

When the butter is gathered, it is taken out of the churn with a wooden ladle, and the milk worked out in the bowl, with the ladle; when the milk is worked off, cold water is poured on and allowed to run off without working the butter in it; when tolerably worked it is weighed, and 1 oz. fine saltpetre is added to, and well mixed with, 1 lb. of the finest dairy salt; and 1½ oz. of the mixture put to each pound of butter. The rest of the milk well worked out and the butter made into rolls or put into small stone jars.

The hands are never allowed to touch the butter during the whole process, it is a dirty practice, and makes the butter disgustingly soft and greasy.

The butter made as above is considered by all who have tasted it to be first-rate, and commands the highest price.

J. M.

Ancaster, Feb. 10th, 1851.

VILLAGE LECTURES.—No. 4.

The Soil and the Air Continued.—Take a jar full of oxygen gas; it is not common air, tho' air contains it, and it is to the oxygen that the air contains, that it owes its ability to burn things, and its ability to maintain respiration—the breath of life in living animals. In the air, this gas is mixed with another, called nitrogen, which dilutes the former, so as to make it fit for the ordinary conditions of human life; were it not thus diluted, it would be much too violent in its action. I have here a jar full of it, and you will see that it makes use of the least spark to produce a flame; so that if the air were pure oxygen, every spark would end in a conflagration.

I shall burn this piece of wood in this oxygen gas. Now, on removing the wood, I find a portion of it has disappeared—it has burned up—it has united with the oxygen gas, and is now in this jar, in the form of a clear gas. The gas is of very different properties now; the oxygen gas being satisfied by union with the charcoal in this way, has no longer any appetite, so to speak, for union with other things of the same kind; it will not now unite with the substances of tallow, and consequently so far from encouraging that chemical action which is productive of flame, it would extinguish flame immediately on its being brought in contact with it; and therefore, also, so far from encouraging that chemical action which goes on during respiration of animals, and to which the healthfulness of a fine bracing air is owing, it extinguishes that chemical action at once, and would choke any animal that fell into it; but to this point we shall refer again.

Now, if I prove that the air contains this gas, the carbonic acid gas, as it is called, which contains the charcoally part of wood, then I shall have proved that the air contains the very substances which we find in trees and plants, and which they take from it in the act of growth, and this is the way in which I prove that. The carbonic acid gas is recognised not only by its extinguishing flame and destroying life, but by this curious property, that when united with lime it forms a chalky insoluble substance; so that if I pour some clear lime water into this jar of it, and shake it up to induce the lime of the water to unite with the gas, it will become white and milky in appearance, owing to the formation of this chalky, insoluble substance, as you see. Now, if I can pass a quantity of common air through some lime water, and the lime water, originally clear, becomes milky in this way, it will be because it, too, contains carbonic acid, and I shall thus have proved that there is in the air, a gas which contains the very particles of charcoal which our plants and trees require for their growth. Of course the air contains a very small portion of it, not so much as a 1000th of its bulk; because, if it contained much, it would destroy life instead of preserving it; and I must, therefore, employ an apparatus which enables me to draw a large quantity of air through a small quantity of lime water; such an apparatus, in fact, as I have here, where the water below falls out and pulls the air in after it, through the lime water in this crooked tube; and you see that though clear before, it is muddy enough now, owing to the formation of chalk in it, or carbonate of lime; and I have thus proved that the air contains the carbonic acid gas which was necessary to form this chalk, contains charcoal—contains the substance of our plants and trees.

The air, then, contains charcoal, and gives it to plants. The fact is, that carbonic acid gas is a compound of charcoal and oxygen; you saw it formed when I burned the charcoal in the oxygen; and the fact is, that, in the sunshine, plants ab-