

Rural Economy.

[COMMUNICATED.]

CLIMATE AND EXERCISE.

Messrs. Editors:—In your excellent Family Paper I sometimes notice half-truths on various subjects, original and selected, and though not, of course, endorsed by you, yet admitted for the sake of "giving all a hearing" for truth's sake and for the general good.

Take a dozen emigrants newly landed on our shores from Britain—they are farmers, or farm-laborers, and intend to follow that occupation still, in this land of their adoption. See them after a year's residence in the country. They have had nothing but out-door labor; remember their robust appearance when they landed a year ago and compare it with their now altered and comparatively bleached looks!

CLEANSE YOUR CELLARS.

Now is the time to clean your cellars.—You should not only clean them, but cleanse them. To be sure, no one ever sees the cellar, and some people seem to clean only for "some other people to see."

In the first place, half the so-called cellars are unworthy the name; they are only pits dug beneath the kitchen floor, and only a sand or clay bottom. It is of course for more difficult to keep such a one neat and sweet than one with a hard cement floor, with boxes and bins for storing vegetables separately, and shelves for fruit, and cupboards for all sorts of things, of which house-keepers have such a great supply.

Of course, there should be windows on every side to secure a free circulation, and consequently free ventilation. Then every scrap of refuse should be removed, and, as far as possible, all vegetables which will keep just as well out of as in the cellar had better be taken out, as the odor from most of them is far from pleasant.

Sweep down all cobwebs, and whitewash overhead and everywhere, finally, where a brush can go. Lime is a powerful disinfectant, and you can't make too free use of it.

A foul cellar will poison the whole house. The light gasses will find their way up to the rooms above, and persons inhaling such a vitiated air may be seized with terrible illness, and yet be in total ignorance as to the source of trouble. A yearly cleansing is not sufficient; it should be looked after weekly. Look at the pork and beef, to see if covered with brine, and if it be sweet and good.

If you keep milk or butter in the cellar, there ought not to be any thing else kept there. Butter is so easily tainted with ill odors; one night's time being sufficient to spoil the best and sweetest. Pine vessels should never be used in the dairy. Do not

put your butter in a pine pail to carry it to market; even in so short a time it will contract a taste of the pine, which will spoil it for all purposes.

MRS. J. T. H.

EARTH WORMS—HOW AND WHAT THEY EAT.

Messrs. Editors:—I see that you have published an article about the habits of earth worms, which useful little creatures seems to be much underrated. They may eat earth, as your author asserts, but I have never seen them do it, although I have seen them eat other things with great voracity, and have also seen them reject particles of earth which adhered to their proper food, such as dead spears of grass, roots and leaves.

I have watched them feeding for hours at a time, and retain a lively recollection of several rheumatic attacks, resulting from the wetting I got while so watching them. They feed at the surface only when the withered vegetation is wet with rain or dew and is in a soft and pliable state. When their food found at the surface is dry and too harsh for their mouths to manage, they retire to the congenial depths of the ground, delighting in heaps of "long" manure, which they reduce to a homogeneous mass of compost with great rapidity by consuming the vegetable and undigested parts thereof, thus transforming the latter matter from a vegetable to an animal character, leaving the mass at its lowest chemical status and so fit for the food of plants. Indeed I doubt if any atoms of vegetation can decay and be again fit food for other vegetable organisms without intervening decomposition in animal digestive apparatus. At all events, it is easy to prove that earth worms are compost makers, and if we do not give them time to properly manufacture their "product" while the manure is in the compost heap, they will appear in the fields and then complete the job, and further, their work in the fields yields another benefit by their boring and opening of the soil.

Their manner of eating is worth noticing. If you seat yourself upon a grass-plot or beside the strawberry bed, during a light rain in warm weather, and have the patience to sit perfectly still for ten or fifteen minutes, you will see innumerable worm heads protruding cautiously from the ground, and feeling around until a spear of soft and recently killed grass is found. The worm touches it first with the extreme point of the head, and then the point retracts inward, much like the toe of a stocking when you touch it with your finger to commence turning it; then the worm shortens its length, the other end being fast anchored in the hole; this action makes a tight in the spear of grass, and then the worm crawls along the outside of his supper until the parts diverge too much, when he takes another pull, and so on until the grass is loosened from its own roots and safely swallowed. I have observed that if a particle of earth adhere to the food it is shoved along as the swallowing progresses, and not allowed to enter the mouth. The final act of swallowing the end, and biting off the lump of root which is sometimes attached, I have never seen, as that is performed within the hole; but I have frequently seen the worm re-appear with a pellet of earth balanced upon its head, or it may be only the piece of root if his supper was clean, which he prowls around for more food while it is good.

When two worms seize opposite ends of the same spear, the pulling and hauling is most comical, reminding one strongly of his early days when he strung grains of corn on opposite ends of a string and fed two rival gobblers. The worm fight generally ends by the breakage of the grass, but if too strong for their strength they both swallow until their heads touch each other, when they both "get," leaving the morsel, which they will not touch again. I have often seen these worms breaking off the dead parts of strawberry leaves, rejecting the living parts, and have also seen them apparently sucking the pollen from strawberry flowers. In the fall large tufts of dead leaves may be seen drawn partially within the worm holes, possible by way of stoppers to keep out the cold.—Sci. Am.

Scientific.

SWISS MANUFACTURES.

Our sister Republic of the Alps displays ingenuity, energy and industry, that will compare with those of the most favored portions of our own country. Its productive industry is equalled by that of no people in Europe. Some claim for Switzerland that its inhabitants produce more than those of any other country on the globe. Its exports amounted last year, to nearly \$33 per inhabitant. These statements will appear the more remarkable, when it is recollected that Switzerland is almost bare of raw material; but notwithstanding this, and its remote position inland, its wares come into successful competition with the manufactures of every other country, not only on account of their cheapness, but for the superior skill and integrity of their workmanship. Our own country imports largely from Switzerland. Who has not a Swiss watch in his house? We receive from this country watches, music-boxes, mathematical instruments, silks, ribbons, cheese, straw-ware, spirits, wines, jewelry, cigars, &c.

Much of the prosperity of the country, is, no doubt, due to the superior intelligence of the people, and the general diffusion of education among the masses. Care has been taken to allow the children time to acquire at least the simple rudiments of an education, before being placed in constant employment. This contrasts strongly with the system pursued by England, where children of very tender years, are employed constantly, and no opportunity given of acquiring

any information, except that necessary to perform some simple mechanical operation. The effect has been to lower the condition of the laboring classes, while among the Swiss and in other continental countries, where a more enlightened policy has been pursued, they are constantly becoming more skilled and intelligent. It is to be regretted, that in our own favored country, there are places where children of tender years are kept constantly employed in manufacturing establishments, without an opportunity being given them to embrace the advantages of our free schools. So far as this persisted in, it will lead to the same process of degradation as in England, and will result in giving us a class of workmen not only deficient in skill, but incapable of advancement. Among the 20,902 persons between the ages of 6 and 18, engaged in regular employment in this city, there are no doubt many who are deprived of every means of procuring an education, unless it be in the Sunday-schools.

The above remarks do not apply to all of Switzerland, but only to the Protestant cantons and cities. Away from these, all is ignorance and stupidity. No greater contrast can be imagined between people inhabiting the same country, than exists between the Protestant and the Catholic Swiss in this particular.

The liberal form of government of Switzerland is productive of a better understanding between the employer and employed; there is a feeling of common brotherhood and common interest, which binds them together, not the repelling influence of aristocratic pretensions which leads to constant misunderstanding, strikes and lock-outs.

The ingenuity of the people is remarkable, and the careful and economic manner, in which they conduct their business, more than compensates for the want of raw material, their distance from the sea board, and from the great commercial centres.

As almost all manufacturing operations are now done by power produced by steam or water motors, the question of the expense of procuring power, affects the location of industrial establishments. One of England's great advantages lies in the abundance and cheapness of coal, by which power is produced. In Switzerland, advantage is taken of the numerous streams flowing from the mountains, fed by melting snow and ice, and equalized in their flow by the numerous lakes. These are made to give motion to the establishments scattered through the valleys. As the water power is not always found at the most desirable place to locate works, numerous ingenious arrangements are made to convey the power from the wheels or other motors. In one instance, where the wheel is placed in a narrow gorge, 180 feet deep, the power is conveyed by a line of shafting, 380 feet, to the manufactory.

Another novel mode of transmitting power, is by wire ropes. The most remarkable instance is at Schaffhausen, on the Rhine. Here is a considerable water power, a portion of which has been utilized by wheels placed on the same side of the river as the town, but until lately, a large volume of water flowed by on the opposite side, unimproved. To use this water power, three large turbines were erected, and the power conveyed from them to the opposite side of the river, a distance of 370 feet, by rope gearing, wire ropes working into grooved wheels of 15 feet diameter. From this point the power is conveyed up the stream, and distributed by rope-gearing to a number of establishments throughout the town. The amount of power distributed in this manner is 700 horse, and the distance it is conveyed, over 3000 feet. These works are constructed by a company "Wasserverk Gesellschafft," who sell or rent out the power to the different works, at a less rate than it can be produced by steam, in the most favored location for procuring fuel.

The hydraulic motors used by the Swiss are generally good; almost every known appliance for procuring power being used, from the simple impact or flutter wheel, seen in some of the old saw mills of this country, to the overshot wheel constructed upon scientific principles, giving a co-efficient of the power equal to 75 per cent., and the turbine producing even a higher percentage.

The greatest economy is practised in the use of fuel, it being scarce and dear. Smoke is not seen to issue from their chimneys. To prevent this no legal enactments are necessary there; such waste of fuel as is indicated by large volumes of black smoke issuing from chimneys would be ruinous to the manufacturers.

While iron ore is abundant in many parts of Switzerland, there is not sufficient smelted for the use of the country, on account of the scarcity of fuel, and large quantities of iron are therefore imported. The small furnaces they have, are managed with the greatest economy in fuel. The heat, which with us is permitted to escape at the tunnel-head, is made to pass through another chamber, in which the ore is heated before being charged into the furnace. In some instances, ovens are constructed in the masonry of the stack, in which the bread of the entire neighborhood is baked by the heat otherwise wasted; and even around the arches, where the blast enters the furnace, drying closets are formed, in which the apples are dried to make "Schnitz," that indispensable article of food, one of the constituent parts of the famous "Dampf Knauf und Schnitz," of the German farmers of our State.

The Swiss steam-engines are much thought of; such care is taken in their arrangements that some consume but from 2 to 4 pounds of coal per horse-power per hour. The majority of steam engines in operation in this city consume from 5 to 8 pounds. Some of the establishments for building machinery are very extensive, one employing 1200 hands. From these shops, work is sent to all parts of the world, and locomotives are now being constructed there to run upon roads in England. Sugar mills, steamboat engines, water motors, and machinery of all kinds, are also manufactured.

The comparative freedom from war which Switzerland has enjoyed, has no doubt done much to stimulate its industry and extend its manufactures. There has been no war since 1815, except the difficulties of 1848, which were speedily terminated by the expulsion of the Jesuits. How soon will it be necessary for our country to rid itself of these enemies of civil liberty, civilization and progress,—these meddlers in the affairs of state in every country in which they have had a fast hold? We were made to feel their influence during our late war, in the manner in which they marshalled and voted, the Roman Catholics casting their influence, in every instance, against the government and freedom.

Those of our citizens interested in mechanics or manufactures, who visit Europe will do well to pay some attention to the Swiss establishments. P. M.

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