

Carbonate of lime is commonly known as lime stone, from which lime is made by heating it and driving off the carbonic acid. As a fertilizer the carbonate is very mild, and many authorities attach little value to it except as a means of improving the mechanical texture of heavy soils. Marl, as a rule, may be regarded as finely pulverized limestone. The test for carbonate of lime is hydrochloric acid, more commonly known as muriatic acid. When this acid is poured on limestone, a strong effervescence takes place, so that by pouring it on marl, the percentage of carbonate of lime may be roughly ascertained by the amount of foaming or effervescence which takes place. Professor Kedzie gives the following mode of testing:

Mix 1 lb. of the acid with 1 quart of rain water and put this in a bottle for use. Take a tablespoonful of the material supposed to be marl, put this in a large glass or earthen vessel (avoiding metallic dishes) and slowly pour over the material a half teacupful of the dilute muriatic acid. If it is a marl the effervescence will show this fact: if it all dissolves, leaving no residue or but little at the bottom of the vessel, it is marl of good quality. If but little is dissolved and a large residue is left at the bottom of the dish, it is of an inferior quality.

He also gives a simpler test for distinguishing marl from clay, viz.: Place a lump in a basin of water, leaving it undisturbed for a short time. If marl, the lump will crumble down into a diffuse mass; if clay, it will be little changed.

In speaking of the value and uses of lime and marl, the Professor does not differ materially from the views already expressed in the *Advocate*. He considers marl valuable for destroying the acid condition of the soil, as well as for its decomposing influence. He recommends it for light sandy soils containing a good supply of vegetable matter, where the decomposition of the humus is slow, and on "soils that run to moss and bunch grass." But where are such soils to be found? Light sandy soils are already too greedy for organic matter; they decompose it fast enough without the acid of lime, and besides, we have never seen a farmer guilty of putting too much vegetable matter into such soils. The natural drainage of light soils aids in decomposing the organic matter fast enough. The quantity he would use is 50 to 75 bushels of marl per acre, applied on or near the surface and mixed thoroughly with the soil. He also recommends marl for dressing pastures and meadows, adding two or three bushels of salt per acre. In speaking of clay soils, he says that a larger quantity than can usually be obtained at moderate rates would be required in order to produce any material change on the physical properties of the soil. On muck beds or lands having a large excess of vegetable matter he would apply 100 bushels per acre or more.

He speaks of marl as a dose, by which he seems to agree with us that it is more of a medicine than a food, and its use can therefore be avoided by good husbandry. Of course, a few soils are constitutionally deficient in lime, and then marl is a good food. This deficiency can easily be ascertained by experiments.

Marl is a whitish material usually found in layers at the bottom of muck-beds and shallow ponds. Any farmer who discovers such a mine on his lands should look round to see how it can be best turned to profitable account.

Bound volumes of the *FARMER'S ADVOCATE* for 1885 can now be procured by sending to this office. Price, \$1.60, including postage.

Can We Compete in the English Market with Wheat Raised in India?

The astonishing progress made in India in the production of wheat should begin to cause alarm amongst our farmers. The American protective policy has driven England to seek new wheat fields, and she may not cease until she is able to tell us to keep our wheat at home. Americans are trying to console themselves with the idea that it would be more profitable for them to consume their own wheat, just as they are attempting to do with their bogus butter and cheese, but Canadian farmers delight in foreign markets, and they would not like to see their wheat industry destroyed through the recalcitrant policy of the Americans.

But there is another phase of the question. Nothing has deteriorated our soil so rapidly as our excessive wheat growing, which, if much longer continued, may lead to disastrous consequences. Although Canada leads this continent in the production of wheat, yet there are other departments of husbandry to which she is equally well adapted. In the production of fruits, live stock and dairy products, this Province has no peer, and if our farmers could be educated up to a knowledge of this fact, they would not complain of losing their wheat fields. No branches of farming fit better together than those just mentioned.

Mr. J. L. Houser, of Massachusetts, who spent considerable time in India, especially at the Government Model and Experimental Farm, in charge of the Director of Agriculture for the District of Cawnpore, recently published a pamphlet which contains an exhaustive account of farming in British India, as well as some interesting statistics.

Within the past five years about a million acres have been added to the wheat area, without any reduction in the other crops, the total wheat acreage now being 27,600,000, an increase of 111,000 acres over 1883-4. The total wheat yield in 1884 was 260,000,000 bushels, and as cheaper foods, such as rice, fruits, vegetables, etc., are consumed by the natives, a very large percentage of the wheat is exported. Not satisfied with this marvelous rate of progress, the Government of India is still pushing railroads and other public enterprises with commendable vigor and rapidity, and new portions of the country are being constantly opened up. The wheat exports have increased from 3,660,000 bushels in 1879-80 to 35,000,000 bushels in 1883-4. The best wheat regions are the north-western Provinces, where the soil is largely alluvial, with a fair mixture of clay and sand, and it is said to be in a fine mechanical condition, as well very productive, all the available manure being carefully saved and applied to the land. The average product is 17 bushels per acre for the irrigated portions, and 10 bushels for dry lands. But the figures should not be taken as a criterion for the productive capacity of the soil after taking the crude mode of husbandry into consideration.

The plow consists merely of a triangular piece of wood with a sort of iron bar for a point. This implement merely tears the surface of the soil, and the land requires to be thus plowed about twenty times before a crop can be vouchsafed. The working bullocks are very slender

and about half the weight of our oxen. The only other implement used is a sort of a log drawn over the field as a clod crusher. The seed is dibbled in the furrows after the plow. The wheat is sown in Oct. and Nov., and harvested in March or April. The weeding is usually done by hand, and the harvesting by a sickle, an acre being harvested in a day by 12 men. The threshing is done by cattle treading the grain on a hard dirt floor, and the cleaning is done by pouring the grain into the wind with wooden scoops. The cost of a farmer's outfit is estimated as follows:—Yoke of bullocks, \$12; plow, 40c; yoke, 15c; leveler, 0c; weeder, 6c; winnowing scoop, 3c; sickle, 6c; water lifter, 50c; total, \$13.50.

The cost of raising an acre of wheat is estimated as follows:

Rent per acre.....	\$ 3 50
Cartage of manure.....	1 20
150 pounds seed.....	1 65
Plowing twenty times.....	75
Sowing by hand.....	15
Watering three times.....	2 25
Reaping and carrying.....	60
Threshing.....	35
Winnowing.....	8
Total.....	\$10 62

Before the building of the railroad, the cost of transporting wheat from Cawnpore to Calcutta (684 miles) was 57.6 cts. per bushel; now it goes by rail for 18.29 cents. An estimate is made of the difference in the cost of laying Indian and American wheats in Liverpool, which shows an advantage of 16½ cts. per bushel in favor of the former. The following are the figures:

Cost of wheat per bushel in Delhi.....	62½c.
Railway freight.....	20¼
Ocean freight.....	20¼
Total cost per bushel in Liverpool.....	\$1.03¼
Cost of wheat per bushel in Chicago.....	\$1.02¾c.
Railway freight to New York.....	19¼
Ocean freight.....	7¼
Total cost in Liverpool.....	\$1.29¼

Mr. Houser makes the following concluding remarks:

In concluding this report, I will state what I think are the advantages and disadvantages of wheat raising in India. First—The wonderful productiveness of the climate and soil. Second—The use of irrigation, on account of which there can be no failure of the growth of a crop. Third—The facilities for inland transportation and cheap ocean freights. Fourth—The variety of seasons, giving the farmer work in the fields every month in the year, thus making the wheat crop almost an extra or surplus one, the other crops supplying the laborers with food. Fifth—The cheapness of labor. All these combined indicate that the wheat-growing power of India will largely increase. The Government is planning in every way to increase the facilities of irrigation, introducing new seed and improved methods of cultivation, and also urging that freights on wheat by the state and other railroads be greatly reduced.

The drawbacks are: First—Heavy storms of wind and rain that cause the grain to lodge just before harvest, when it quickly spoils in the hot sun. Second—Heavy hail-storms, and in some localities frost. The hail breaks the stalk or threshes out the grain. Third—Rust, flies, and locusts or grasshoppers. All these, at times, greatly affect the crops, but they are accidents and expected to occur only occasionally.

A live stock organ actually thinks that "scrubs" may be utilized by poor farmers by "grading them up."

Horses that eat their oats too greedily may be cured of the habit by putting a number of stones, say about the size of a hen's egg, into their feed box.