

than our city supplies, to work upon the business would soon cease to be remunerative. Few of those pay as high a price as ten cents per gallon for milk, while all the milk sold in cities is at from five to eight cents per quart—according to quality and locality.

If it be desirable to guard the interest of the ignorant, the dirty and incapable by avoiding a standard too high, by all means do so; but let us not be restricted to the minimum. We have grades of flour, pork, grain, fertilizers, and other goods subject to inspection, and why not of milk? If we must have a low grade, why not a middle, and a high grade also? If to be on the safe side for prosecutions, why cannot we take the average as our standard and one better as our high grade? Thus we might adopt the following:

Grades.	Solids.	Fat.
No. 1 Quality.....	14.00	4.75
No. 2 Quality.....	13.00	4.00
No. 3 Quality.....	12.00	3.50

The following range of values accords with commercial experience—milk having only 3 to 3½ per cent. of fat sells at from five to six cents per quart in the principal cities:

Milk containing up to	Butter Fat, per cent.	Price per quart.
" " "	3.0	5 cents.
" " "	3.6	6 "
" " "	4.2	7 "
" " "	4.8	8 "
Rich Jersey or Guernsey	5.4	10 "

The above prices are obtained in Montreal and Toronto—though the content of fat is not always uniform when the price is below seven cents. Dealers should be required to state which quality of milk they supply—number one, two, or three.

There is no surer way of protecting milk for town and city consumption than by ensuring that it shall first be from well fed cows; such milk will be sound, and be better cared for by the vendors than the thin and poorer qualities.

From the Dairyman.

JAMES CHEESMAN.

The Sources of Phosphoric Acid CHARLESTON ROCK PHOSPHATE.

EDS. COUNTRY GENTLEMAN—To those of us who must buy fertilizers, how cheapest to get phosphoric acid is the question (Kainit and wood ashes supply the potash.) Shall it be animal bones at say \$35 per ton, acid phosphate (phosphate rock treated with sulphuric acid), or the same rock ground fine (floats) in its natural state? This latter contains 55 to 60 per cent of phosphate of lime, and can be had at but little over one-third the cost of the pure ground bone. But in the untreated rock the phosphoric acid is in an unavailable form, hence acts slowly. Questions—How slowly on heavy clay land, especially on grass? (1) Would we eventually get all the phosphoric acid in the rock? In how many years the greater part? (2) Would using the floats as an absorbent of urine and for disinfecting stables promote its decomposition and render it sooner available as plant food? (3) I had thought of broadcasting it on grass and grain and letting winter's frosts have their full influence. I am offered Lister's ground bone here at \$35 per ton; acid phosphate, with 13 to 14 per cent of available phosphoric acid, at \$16.50; floats (very finely ground Charleston rock) at \$13.50; and containing 55 to 60 per cent of phosphate of lime.

T. B. B., Newburgh, N. Y.

[Answer by Prof. S. W. JOHNSON, New-Haven, Conn.]

A satisfactory answer to the question, which will be the

most advantageous to apply—one pound or one hundred weight of phosphoric acid in the form of finely ground "floats," in that of South Carolina rock in the ordinary state of pulverization found in commerce, in that of "bone," or finally in that of "plain-superphosphate" or "dissolved South Carolina rock," can only be given on the basis of actual experience or trial on soil and crop, and under climate and circumstances closely similar to those which belong to the case in view.

The different effect of the phosphoric acid in the several sources of it above named, is due simply and solely to its different solubility. In none of them is it entirely insoluble and unavailable. There can be no doubt that enough ground South Carolina rock, or enough even of "spent bone black," or of "ground Canadian apatite" (1) (which are commonly reckoned as the least available forms of phosphoric acid supply), admixed with any soil, would effectually fertilize it in respect to phosphoric acid. Apatite is indeed the most commonly occurring phosphate in the rocks from which by disintegration, soils often fertile are formed. The microscopic examination of rocks, cut to thin sections for that purpose, very commonly reveals apatite crystals.

On the other hand, the water soluble phosphoric acid of superphosphates (as of dissolved bone or dissolved bone-black, or dissolved S. O. rock, or dissolved apatite) when incorporated with the soil gradually becomes less soluble, and in some days or weeks is found to be "reverted" and practically insoluble in water, though still readily taken up by plants.

COOKING FEED.

Mr. W. A. Henry of the Wisconsin Agricultural Experiment Station writes to the editor of the *American Cultivator* as follows:

In your issue of October 29th you say, in an article on "Warming or Cooking Food:" "When the philosophy of cooked food for stock is better understood the steamer will be more thought of than ever, but it will be used more for slightly warming food and drink than for cooking the same." This seems to me the very best expression that can be given to our knowledge on this important subject up to this date. In the fourth annual report of this station, just issued, will be found a summary of every and all experiments on cooking feed for swine that I can learn have been conducted in America at agricultural colleges or experiment stations. The following gives the results of this investigation:

WISCONSIN EXPERIMENT STATION.

Cooked barley-meal (four trials) was to uncooked as	93.7 to 100
Cooked corn-meal (two trials) was to uncooked as.....	81.0 to 100
Cooked corn-meal and shorts (two trials) was to uncooked as.....	96.1 to 100
Cooked whole corn and shorts (two trials) was to uncooked as.....	85.8 to 100

ONTARIO AGRICULTURAL COLLEGE.

Cooked peas (two trials) were to uncooked as...	84.9 to 150
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MICHIGAN AGRICULTURAL COLLEGE.

Scalded corn and oat-meal was to wet meal as.	101.7 to 100
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KANSAS AGRICULTURAL COLLEGE.

Cooked shelled corn was to uncooked corn as.	84.0 to 100
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IOWA AGRICULTURAL COLLEGE.

Cooked shelled corn (two trials) was to uncooked as	82.3 to 100
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(1) Utterly useless unless dissolved in acid after grinding.

A. R. J. F.