

God and man, the one, and the sufficient, and the only Mediator—every Protestant Bible sent on its glad errand—is a new triumph—is a new protest of a living Protestantism against the presumptuous edict that calls her dead, in the murderous hope of burying her alive!—*Dr. Williams.*

Scientific.

Soda and Cremor-Tartar Bread.

We find in the *Transcript* the following communication on BREAD, over the initials of C. T. J., which are supposed to be those of a well-known chemist. It is therefore worthy of attention, and it agrees with our own view of the matter:

"MR. EDITOR.—In reply to the questions proposed to me in your paper of 20th inst., I would state, that super-carbonate (bi-carbonate) of soda is not considered in any way injurious to the human stomach, provided it is not taken in extravagant doses, or too frequently. It is obvious that it might prove injurious if too frequently taken, and it is not improbable that long-continued and large doses would ultimately produce scurvy, a disease of the blood, such as I have known to result from making too free use of pearlash and saleratus water; but it is not probable that any one, unless affected with a morbid taste, would be likely to indulge to excess in drinking this alkaline solution. Small quantities of bi-carbonate of soda act beneficially in correcting or neutralizing the acidity of an overcharged stomach, and in cases where acidity has been produced by eating food, which, not digesting, forms vinegar, such as sweet things, vegetable food, &c.

It also appears that bi-carbonate of soda aids in the formation of a more liquid bile, and thus removes biliary obstructions or thickened bile from the gall bladder, for the bile is a sort of soda soap, and is the natural corrective of acid ingesta in the first intestine, the duodenum; and is necessary in the preparation of the chyle or first formed or white blood. Soda is one of the most common bases of the salts existing in the human body, and in proportions, it cannot be injurious. It is maintained by Duma and other French chemists, and physiologists, that the soda of the bile is mostly derived from the decomposition of sea-salt, (chloride of sodium,) the chlorine of the salt forming chlorohydric acid, and going to constitute part of the gastric fluid in the stomach, while the sodium oxidizing and forming sodas, is secreted by the liver, as a component of bile. It is evident that soda, furnished from other sources, will serve a similar purpose in the secretions of the liver, and any excess will be excreted by the action of the kidneys, those organs that act so efficiently as scavengers to the system, and save men not unfrequently from the baneful effects of improper ingesta and restore the healthful state of the blood.

By digestion and secretion, organic acids, such as tartaric, citric, malic, and acetic, are separated from the alkaline bases, so that the alkalies are excreted, by the action of the kidneys, a neutral salt producing an alkaline excretion. Cremer tartar is by-tartaric acid of potassa, and is a well-known acid salt, much used in medicine, and of late in cookery. When bi-carbonate of soda is added to it in proper proportions, neutral tartarate of potassa and soda, or Rochelle salts, is produced—a mild purgative salt. As the soda combines with the tartaric acid, carbonic acid gas is liberated from the bi-carbonate of soda, and this gas, when disengaged in dough, renders it spongy, or light, by its elasticity. It is the same gas that is formed by the process of fermentation, and it is not in any way noxious when taken into the stomach, but on the contrary is wholesome; and when drank in water, called soda-water, it is, as we all know, highly refreshing. Carbonic acid gas is baneful only when drawn into the lungs. It then acts not only as a poison, but if breathed in large quantities, actually drowns the individual breathing it. Cats have been drowned while endeavoring to pass across the bread-trough of a bakehouse, the trough having been filled with gas by the fermentation of dough.

In reply to the question, as to the use of cremer-tartar and bi-carbonate of soda in making bread, I would say, that this chemical operation is not regarded as more than a poor substitute for the process of fermentation, and is only justifiable in cases of urgency, when there is not time to raise bread properly. It cheats us out of the grape sugar and dextrine, which give sweetness and flavor to properly fermented bread, and substitutes a dose of Rochelle salts in their place, and that salt is mixed with dri-

ed starch and unaltered gluten. Of course such bread is very objectionable, though it is not poisonous, and for my own part I prefer to keep my food and medicine separate."

THE HILLOTYPEDISCOVERY IN DAGUERREOTYPES.—The last number of the *Daguerrean Journal* printed in New York contains another communication from Mr. Hill, relative to his discovery of producing a variety of tints of colors in the same plate. The editor in prefacing the letter says the views of landscapes by this process are unequalled; the flower garden with all its variety of blooming flowers can be imprinted with a degree of exactness and brilliancy which no imagination can comprehend. It will probably be six months before the discovery is ready for the public. Mr. Hill in order to show that he can produce more than one colour at once on a plate, says he has produced several portraits, one of a labouring man, with a sun-burnt face, very red cheeks and lips, blue eyes, auburn hair, the cravat red and blue; all the above colours are developed with truthfulness. A collection of small paintings, red, yellow, blue, and combinations of these, forming seven shades of red, as many of yellow, three of blue, five of green, three tints of purple, making in all twenty-eight hues, all of which he has on his plate to the very tint, except the chrome yellow, a colour which he has the most difficulty with, but which he thinks he can overcome. The discovery, if it should turn out as stated, is a very interesting and important one. We are assured by a gentleman of this city, who has seen the specimens, that the discovery is genuine, and that colours taken have the same force and brilliancy as is exhibited in nature. He says nothing can exceed the beauty and perfection of those colored impressions.—*Boston Paper.*

THE MOON DAGUERREOTYPED.—Mr. J. L. Whipple, the distinguished daguerreotypist, has succeeded, with the aid of Mr. Bond, the Cambridge astronomer, in taking views of the surface of the moon, as it appears through the great telescope at the Observatory. We have seen two daguerreotypes representing the moon as it appeared on Monday and Thursday nights. The mountains and valleys of the moon are very distinctly defined on the plate, and it is believed that by the aid of these representations taken at different phases of the moon, their height and depth may be determined. The importance of these experiments will be duly appreciated by the astronomer.—*Boston Journal.*

ARTIFICIAL CRYSTALS.—M. Eoelinen, the director of the national porcelain manufactory of Sevres, has succeeded in producing crystallized minerals, resembling very closely those produced by nature—chiefly precious and rare stones employed by jewellers. To obtain this result, he has dissolved in boric acid, alum, zinc, magnesia, oxides of iron, and chrome, and then subjecting the solution to evaporation during three days, has obtained crystals of a mineral substance, equalling in hardness, and in beauty and clearness of color, the natural stones. With chrome, M. Eoelinen has made most brilliant rubies, from two to three millimetres in length, and about as thick as a grain of corn. If rubies can be artificially made, secrets which the old alchemists pursued cannot be far off.

INTERESTING FACTS.—Why have white veils a tendency to promote sunburn and freckles? Because they increase the power of the sun's light. Why does a flannel covering keep a man warm in winter, and ice from melting in the summer? Because it both prevents the passage of heat from the man and to the ice. Why does a person with a cold in the head, catarrh from the eyes and nose, experience more relief, on applying to the face a linen and cambric handkerchief than one made of cotton? Because the linen, by conducting, readily absorbs the heat and diminishes the inflammation, while the latter by refusing to give passage to the heat, increases the temperature and pain. Why is loose clothing warmer than such as fits close? Because the quantity of imperfectly conducting air thus confined about the body resists the escape of the animal heat.

WHITE-WASH.—Take two quarts of skimmed milk; two ounces fresh-slaked lime; two pounds whiting; or the same proportions for any large quantity. Put the lime into a stone vessel, and pour upon it a sufficient quantity of milk to make a mixture resembling cream;

then add the remainder of the material. When this is done, crumble and spread the whiting on the surface of the fluid, in which it will gradually sink. It must then be well stirred, or ground, as any other paint. By the addition of any coloring matter, you make it suit your fancy. It must be put on with a paint brush, and when dry, a second coat should be given. The quantity named is sufficient for twenty-five square yards.—*Albany Cultivator.*

MAKE YOUR OWN CANDLES.—Take twelve ounces of alum for every ten pounds of tallow, dissolve it in water before the tallow is put in, and then melt the tallow in the alum water, with frequent stirring, and it will clarify and harden the tallow so as to make a most beautiful article, for either summer or winter use, almost as good as sperm. If the wick be dipped in spirits of turpentine, the candle will reflect a much more brilliant light.—*American Farmer.*

The Farm.

Some Facts About Orchards in New England.

BY HENRY P. FRENCH, OF EXETER, N. H.

An instance of Yankee shrewdness has recently come to my knowledge, which well illustrates the advantages of knowing something on this subject. In the spring of 1846, a Mr. W. was engaged in grafting apple-trees in various parts of Rockingham county; and among the rest, grafted enough to amount to about twelve dollars, for Mr. R. of Braintree, upon an old orchard of natural fruit consisting of about one hundred trees. Mr. R. thought it rather extravagant to expend so much in an experiment so hopeless, and W. finally proposed that he would go on in subsequent years and graft as many of the old trees as he chose, do the necessary pruning, and receive for his pay one half the fruit that should grow on his grafts during the next twelve years, and R. should cultivate the land among them, for his own profit. This was considered a very liberal proposition, and at once accepted, and the contract was reduced to writing, and executed. I happened to be at Brentwood during the past autumn, just after W. had called for his share of the fruit, and learned that the scions set in 1846, for setting which he had charged twelve dollars, produced sixteen barrels of marketable Baldwin apples, worth twenty-four dollars. Mr. R. had become so far convinced of his mistake, that he offered W. one hundred dollars to release his interest in the orchard, which W. promptly declined. I soon afterwards met W., and conversed with him on the subject, and he said that so far from releasing his interest in the contract for that sum, he would not sell his share of the fruit for one year for that amount, and allow the purchaser to choose it out of the term.

He has now grafted most of the trees with the Baldwin apple, and thinks he shall get more than a hundred dollars a year, in each of the even years of the last half of his term. The even year is, as you well know, the bearing year for the Baldwin, throughout New-England. Mr. W. further informs me, that he has made many similar contracts in the neighborhood, and has acquired an interest in about one thousand trees; that his share of apples grown on land of other people, the past fall, was ninety barrels, and that none of the scions which produced were set prior to 1845. He grafted one tree in 1844, which produced in 1850 six barrels of fruit, and he knows fifty trees which this year produced ten barrels each, worth in all \$750.—*Vt. Chronicle.*

Fruit Trees.

Be careful in planting to give the trees a fair chance for life and health by digging the holes in which they are set wide and large, so that they may be surrounded by loose earth, that can be easily penetrated by the tender fibres of the roots which are to convey nourishment for their sustenance and growth. A tree properly planted will grow as much in five years as one carelessly and badly set will in ten; and often the chance of survivorship is dependant on this slight circumstance. An excellent plan for preventing young fruit trees from becoming hide-bound and mossy, and for promoting their health and growth, is to take a bucket of soft soap, and apply it with a brush to the stem or trunk, from top to bottom; this cleanses the bark and destroys the worms or the eggs of insects. The soap becoming dissolved by rains, descends to the roots, and causes the tree to grow vigorously.

Plant Trees.

A little more attention, a little more thought of the morrow, a little more faith in what a day or a year may bring forth, would surround every house in the country with shady groves, and fruitful yards. Plant a vine here, and a tree there—send or go to your neighbor's orchard and clip a bud or a shoot, and insert one in every stock that does not already produce fruit. Plant trees by the fence sides; the roots will penetrate beneath them and draw sustenance from ground you cannot cultivate. Set a stout thrifty grape root, directly where the soap suds from the kitchen will be daily thrown, and in three years' time you will have a fruit bearing screen to hide the view of some unsightly place. I give you this timely notice, that you may not let this spring pass by without making the attempt, at least to follow my good advice. SOLON.

American Agriculturist.

WHIP, OR SPLICE-GRAFTING.—This method of grafting is performed in the spring at the usual time of other grafting. For nurserymen, this mode would not be desirable; but to those who have a few small trees in their gardens which were budding last autumn and did not take, or which they wish to bring into bearing earlier than by inoculation, this species of grafting is recommended. My method is to take scions 3 or 4 inches long, and cut them splicewise, about an inch and a half, cutting the stock in the same manner, then "round out" the scion before applying it to the stock, so that the bark shall be prominent, in order that the sap shall "meet" carefully placing it right on one side, the other coming as it will; then wind around a cotton string or wicking with one hand, while the scion is kept in place by the other, applying grafting wax over the whole joint and wicking. This done, the scion will generally live and thrive; but though a simple operation, it is a careful one. It should be borne in mind, that this mode is confined to small trees, one or two years old, from one-fourth to three-eighths of an inch in diameter; when they are half an inch through, the common mode is most proper.

Tanks for Soap Suds.

In connection with every sink, or wash-room, there should be a large and permanent tank for the preservation of the rich and fructifying liquid called "soap-suds." Probably the best "tank" for this purpose that has ever been invented, is the egg-shaped, cemented one, for composting. The size, of course, of this receptacle, must be graduated by the size of the establishment it is designed to accommodate, but its position should be near whence the suds with which it is to be supplied is to be obtained. In the first place, a large excavation is to be made, and walled up with small stones embedded in plastic clay mortar, a rough coating of which should be applied to the surface, preparatory to the final and outside coating of cement. This should be put on in three successive coats, time being allowed for the first coat to harden before the application of the second, and the second before the third. It is scarcely possible to make the walls or coating too strong and substantial, as the process of throwing in the materials, and raking them out through the season, will necessarily expose it to severe trials, and as a breach, however slight, would abridge its usefulness and efficiency in a very essential degree, and in its repair subject one to inconvenience and expense.

In the spring, as soon as the air becomes mild, throw into the tank a small load of muck, forest mould, leaves and rich loam, and conduct on the wash from the sink and wash-house. In two weeks supply another lot—any absorbent and decomposable matter will answer—and so on through the season, cleansing out the receptacle as soon as it becomes full, and stacking the rich and fermenting mass in your compost shed, where it should remain covered with gypsum and pulverized charcoal, while the tank is being again filled up.

In this way, a very important addition will be made to your manure heap, and the article thus formed will be found a most efficient fertilizer, especially when applied to corn, or cereal grains. For garden purposes it is unsurpassed, probably, by any stimulant than can be applied. It is also excellent for top-dressing grass lands. In autumn fill in with good materials, and cover the surface over with boards and soil, allowing from six to eight bushels of pulverized charcoal, six bushels of gypsum and ten pounds of sulphuric acid, to every three cords of compost, and clean out early in the spring.—*Germantown Tel.*