Scientific.

BORAX FOR SALTING BUTTER.

The Italian Minister of Agriculture has addressed a communication to the Chamber of Commerce of Milan relative to experiments in salting butter with borax which have been carried out at the agricultural station at Florence. From the account which appears in the *Giornale di Agricoltura*, borax would appear to have a most marvelous effect in insuring its absolute preservation. Samples of fresh butter made at the Florence station, and purposely not carefully freed of their buttermilk, were found, on the addition of about 8% of borax, to maintain their natural fine flavor, without the least change whatever, for upwards of three months. To attain this satisfactory result it is necessary that the borax should be perfectly dry and in very fine powder, and care must be taken to insure its thorough mixture with the whole mass of the butter operated on. Among the further advantages of this plan, it is noted that borax imparts no flavor of any kind to the butter, while it is entirely harmless in its nature, and also reasonably cheap. Still later experiments have shown that a very much smaller proportion of borax suffices to produce the desired effect, and also that simple solutions of the salt act quite as well as the dried powder.

It has been alleged that too much borax imparts a bitter flavor. This might be lessened by washing in water. The main point is that if borax should prove a useful preservative element for butter, meats, &c., the borax industries of Nevada might be very properly advanced.

THE NATIONAL BOARD OF HEALTH, in its circular on "Desinfectants and How to Use Them," makes a clear distinction between disinfectants and deodorizers, and disseminates the wholesome truth that "disinfection can not compensate for want of cleanliness or of ventilation." The recommendations of the board as to the disinfectants to be employed are as follows: For fumigation (that is, the purification of an infected atmosphere), roll-sulphur; for sewers, cess-pools, and the like, sulphate of iron (copperas), dissolved in water in the proportion of 1½ p unds to the gallon; for clothing, bed-linen, etc., sulphate of zinc and common salt in the proportions of 4 ounces sulphate and 2 ounces salt to the gallon. The interaction of these two compounds doubtless results more or less promptly in the formation of sulphate of sodium and chloride of zinc, which last is recognized as being the most energetic of the mineral disinfectants. The recommendation of the board to employ the zinc compound in the form of sulphate (with salt), instead of applying the chloride of zinc directly, may perhaps be explained on the ground that the sulphate of zinc is a stable salt that remains in solid form, and may be exposed to the atmosphere without change; whereas the chloride of zinc can not be preserved in solid form save in hermetically-sealed vessels, having such a powerful avidity for moisture that it rapidly liquefies by abstraction of moisture from the air. This property renders zinc chloride inconvenient to handle. By its indirect production after the recipe of the board, this objection is overcome. The board does not recommend the use of carbolic acid for general uses, for the reasons that the quality of the commercial article varies greatly, that it is difficult to determine its quality, that it must be used in comparatively large quantity to be serviceable, and that it is liable, by its strong odor, to give a false sense of security.

THE Magnitude of the Beet-Sugar industry in Europe may be gleaned from the following facts relating to the case in France: There were in that country in 1876, 530 beet-sugar factories, which produced 400 million kilograms (880 million pounds), and representing the following values:

	Francs.
Sugar, 400 million kilos	64,000,000
Molasses, 235 million kilos	26,000,000
Pulp, 1,200,000 tons	20,000,000
Manure, 900,000 cubic meters	2,700,000
Total	312,700,000

or about 62½ million dollars.

The industry in France consumes eight million tons of beet-roots, bought of cultivators in a half-dozen departments, at an annual cost of 160 million francs. It employs, in labor and in fattening, thousands of cattle, and consumes nearly 1½ million tons of coal, to say nothing of the host of collateral industries which it strengthens. It returns, as we have seen, 160 millions to the cultivators of about 200,000 hectares of land; gives back to the agriculturist a value of 20 millions in the form of cattle food, on which 200,000 head of cattle are fed during the year.

NEW THEORY OF TERRESTRIAL MAGNETISM.—The theory lately advanced by Professors Perry and Ayrton, of Japan, to account for the magnetism of the earth, and which has provoked much discussion, is thus briefly summarized in the *Phylosophical Magazine*. They find this cause in the revolution of the earth beneath the electrical charge originally and at all times present in the atmosphere. By calculation, they find that the difference of potentials between the earth and space necessary to produce a distribution sufficient to bring about all the observed magnetic effects would be represented by 54,000,000 Daniell cells. And, adds our authority, they prove that "if the earth be electrified, it must, from its very rotation, quite independently of all other bodies in the universe, be magnetic; and if it consists of a shell of iron, thick or thin, then that the law of distribution of magnetism produced by this electrical charge in mechanical rotation will be identically that given by Bist; and lastly, if the earth were wholly of iron, a difference of potentials of about 54,000,000 volts between it and space would be sufficient to produce the necessary amount of charge."

TRAVELLING STONES.—Many of our readers have doubtless heard of the famous travelling stones of Australia. Similar curiosities have recently been found in Nevada, which are described as almost perfectly round, the majority of them as large as a walnut, and of an irony nature. When distributed about upon the floor, table, or other level surface, within two or three feet of each other, they immediately begin travelling toward a common centre, and there lie huddled up in a bunch like a lot of eggs in a nest. A single stone, removed to a distance of three and a half feet, upon being released, at once started off, with wonderful and somewhat comical celerity, to join its fellows; taken away four or five feet, it remained motionless. They are found in a region that is comparatively level, and is nothing but bare rock. Scattered over this barren region are little basins, from a few feet to a rod or two in diameter, and it is in the bottom of those that the rolling stones are found. They are from the size of a pea to five or six inches in diameter. The cause of these stones rolling together is doubtless to be found in the material of which they are composed, which appears to be loadstone or magnetic iron ore.—*Virginia City Enterprise*.

DETECTION OF FICTITIOUS BUTTER.—Herr Fisher asserts that the examination of butter by polarized light with a magnifying power of about 200 to 300 diameters, affords a much more certain criterion of its purity than a specific gravity test. Examined in this way, fictitious butter shows not only the globular drops and salt crystals characteristic of genuine butter, but likewise other more or less perfectly developed crystals. The author also finds this method may be applied to the determination of different kinds of fats, inasmuch as each of these shows characteristic colors in polarized light. Mutton-tallow, for instance, always gives a blue tone; cocoa butter gives colors passing from the brightest green to the deepest red; the fat of oxen gives green and white luminous effects; while small b ight green semi-lunar and vermicular bodies appear in common light. Hog's lard shows many colors, especially red and blue—yellow, which is characteristic of cocoa-butter, being absent. For the accuracy of this abstract, we refer to the *Journal of the Am. Society*.

CARBON IN COMETS.—It is generally believed that some compound of carbon exists in comets, and it has been assumed that the bright lines in the spectra of these bodies were due to that compound being in an incandescent state. G. J. Stoney has advanced another hypothesis. He suggests that the bright lines are caused by the light of the sun falling on the compound of carbon and rendering it visible in the same way that light renders the moon, the planets, and other opaque objects visible, the vapor of carbon being opaque to the particular rays which appear as bright lines in its spectrum.

JAPANESE CEMENT.—Mix the best powdered rice with a little cold water, then gradually add boiling water until a proper consistence is acquired, being careful to keep it well stirred all the time; lastly it must be boiled for one minute in a clean saucepan. This glue is beautifully white and almost transparent, for which reason it is well adapted for fancy paper work, which requires a strong and colorless cement.