

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported expressly for the Scientific American.]

On Thursday evening, the 8th inst., the usual weekly meeting of the Polytechnic Association was held at its room in the Cooper Institute, this city; the president, C. Mason, in the chair.

MISCELLANEOUS BUSINESS.

Mathematical Theory of the Wedge.—Professor Reuben, of the Cooper Institute, read an elaborate paper on the mathematical theory of the wedge, and setting forth discrepancies on the subject among various authors on mechanical philosophy.

Mr. Seely—The wedge is a modification of the inclined plane, in which the plane moves; whereas, in the inclined plane proper, the plane is stationary; but the mathematical relation of power to weight is the same in both cases. This principle settles every question that can be raised.

Major Serrell considered the subject of altogether too elementary a character to be entertained by the club.

The regular subject—"Adulteration and Sophistication of Food"—was then called up, and there ensued the following

DISCUSSION.

The president remarked on the advantages a chemical laboratory, under the patronage of the institute, would afford in the elucidation of such subjects as that under consideration. This project is now seriously entertained by members of this institute.

Mr. Bruce read an extract from a late newspaper, showing what havoc a certain Dr. Cox had made (in Cincinnati) among liquor-dealers for vending adulterated liquors.

Dr. Stevens—One of the present aspects of our civilization would be amusing to the philosopher, if it were not for the unmitigated dishonesty revealed and the injury to health and life. I allude to the adulterations of food, dietary articles and drinks—to the *bogus* character of almost everything in common use. We not only put bogus money in our pockets, but wear bogus shoes, clothed in bogus cloth, and wear bogus hats. We drink bogus coffee, with Canadian chickory, Ohio peas, or New England beans, for our breakfast; though most persons would prefer Mocha in the morning, peas for their soup, and beans with a juicy piece of well-browned pork for the grand *entree* of dinner. At our corner grocery we can buy coffee from 8c. to 20c. per pound, according to our taste or plethoric condition of our purse, all from the original bag of Java or Laguira. Our puddings, cakes, custards, preserves, &c., &c., are flavored with any desired extract, from lemon or rose to "thousands of flowers," all made by the chemist from fusel oil. With the greatest of care, this product of the still is extracted from Bourbon and Monongahela; but, like a true Proteus, it re-appears in a thousand new forms. We call for strawberry, vanilla, or what you please of the long list of sirups handed you at the soda fountain of a hot summer day; the sirup is as innocent of its name as the botanist of the fruit from which it is made. Fusel oil is the plain English name of the whole catalogue. We can purchase "Canton teas" in the market, where the proportion of genuine tea-plant leaves to the other shrubs and herbs and leaves of the mixture is 1 to 10. We can call for the genuine "Simon Pure," and find that wily John Chinaman has already sipped his breakfast from the first draught of the brain-cheering aroma. Perhaps we shall have palmed off upon us a Water-street mixture of damaged and stale teas, with clover leaves and a wisp of highly flavored article to delude the olfactory organs and swindle the unwary. Do we know how much logwood or Nicaragua wood we purchase with our cayenne pepper? how much meal with our ginger? And with our other spices, how much of spice berries, from which the essential oil has been previously extracted by distillation? Good Yankee white oak acorns are strangely metamorphosed into nutmegs, which otherwise, with care and culture, might have made splendid pasture oaks, and given to our Yankee grandchildren the means of ship-building from native timber. Why should we attempt to sweeten our coffee with the saccharine marble of Westchester or Berkshire? It may add to the weight of the parcel; but its saccharine qualities are not equal to the brand of "W. W. W." or Stuart's "triple refined." Is it right to rob the in-

dependent sovereignty of Coney Island, and call the robbery a sale of muscovado sugar? One may be pardoned for smoking a good Long Island cabbage, and enjoying in the pleasing illusion that he is indulging in a real Havana: but we submit, with some trembling, if it would not have been better for him, and more conducive to true health, to have eaten the cabbage and omitted the smoking?

In these days of cant and sharp driving of bargains, the satire of the following may not be too cutting:—"John, have you sanded the sugar?" "Yes." "Watered the rum?" "Yes." "Dampened the tobacco?" "Yes." "Mealed the ginger?" "Yes." "Softened the molasses?" "Yes." "Then come to prayers!" We sip bogus wines at our dinners, guzzle bogus beer at our saloons; and

"Become, with Tam, of memory glorious,
O'er all the ills of life victorious!"

on bogus brandy.

Has our pet baby the colic, we send to the apothecary for a little peppermint; we administer it, and also a little *spirits of turpentine*, which being good for worms, we thus "kill two birds with one shot," supposing, always, that we save our pet. When succumbing to the "ills that flesh is heir to," we take bogus medicines, leaving bogus bills for executors to pay. We are borne in a bogus coffin to the last embrace of honest Mother Earth, no more to be deluded with bogus friends.

Mr. Butler—Cannot scientific men give us tests of the adulteration of food so simple that we may apply them in our own families? The test of cost all can understand; when we can constantly buy an article for less than what the genuine can be afforded at, we may look for adulteration. A few days ago I saw some tea which would immediately stain a polished knife; was the fact evidence of fraud?

Mr. Fisher—A short time ago, I proposed to the editor of a paper that he should employ a chemist to examine articles of commerce, and then publish the names of dishonest manufacturers and dealers. He replied that he had on hand three libel suits for publishing the names of delinquent subscribers, and that he did not care about enlarging his business in that direction. Mr. Fisher, however, favored the project of a laboratory connected with the institute. He believed it might be so conducted that its decisions should be above suspicion of unfairness and prove of the greatest service to the people.

Mr. Dibben—Many bakers, by mixing with wheat flour, maize, potatoes, rye flour, &c., which have the property of retaining moisture, are able to sell a loaf of greater weight than their neighbors for the same money. And I do not hesitate to say that such bakers also sell better bread. Wheat flour may contain more nutritive matter for a given weight than other flour; but the mixture is more palatable and more healthy. In England, flour from horse beans is commonly used and approved, mixed with wheat flour.

Dr. Gould—I believe more harm is produced in New York by diseased meat than by all other unfit food. The beef eaten here has traveled 500 or 1,000 miles, and is slaughtered when a high fever or some worse disease is on. It is a common thing to see, in the rear of a drove of hogs, from two to half a dozen carts to carry the animals which are unable to stand on their feet.

Mr. Worthen (a baker) presented to the club a specimen of the good old-fashioned "rye and Indian" bread. The loaf was raised with yeast, and baked 12 hours. Bakers generally know how to whiten dark flour. A great deal of oil of vitriol is used for that purpose. He had seen bread which would blacken the knife which cuts it.

Dr. Reuben—The flesh of animals killed in a state of fever is unfit for food; they should be slaughtered at the place where they grow, and their carcasses be preserved. Meat may be preserved in sealed cans which contain an absorbent of oxygen, or by packing with ice. Such a system would be economical and healthy for all concerned. We need inspectors to see that the people are protected.

The President—We had inspectors of everything a few years ago, but the people needed protection against them more than the articles they inspected. The system did not work well.

Mr. Seely—The statements made by Dr. Stevens are no doubt true; but I do not find in them sufficient reason for apprehension of great evil. Much of what we

call "bogus" may be as good as the genuine; men sometimes surpass Nature in fitting things for their especial use. Factitious articles of commerce are always cheaper (often better) than the productions of nature which they imitate; we buy ultra-marine for as many cents per pound as we formerly paid dollars per ounce for Nature's *lapis lazuli*. Factitious liquors may be made less injurious than any produced by the direct processes of fermentation and distillation. A gallon of deodorized alcohol, costing 60 cents, by the addition of a gallon of water and a few harmless articles to please the eye and palate, will make two gallons of better brandy than was ever imported. The fusel oil which all "genuine" liquors contain, is more injurious to health than any of the approved ingredients which are used in the manufacture of adulterated or bogus liquors. Some day physicians and others who lead the fashion about food and drinks will learn these truths, and teach the people to use pure alcohol whenever such stimulant is desirable, instead of prescribing, as now, a far inferior brandy at \$8 or \$10 a gallon. Factitious liquors, besides being more healthful, may be made more agreeable to the taste. I have been requested to state that saleratus was not such a harmful substance as was represented here a few weeks ago; and for proof of its innocent nature, I was shown healthy men who had been constantly working in it for five years or more. In the factory, it flies about like flour in a mill; the workman breathe it, get it all over their persons and clothes, and yet do not appear to suffer any ill from it. But the explanation is due that we spoke here of the old-fashioned saleratus (carbonate of potash), while the factory I visited made only soda saleratus (carbonate of soda); perhaps this reconciles the disagreement. In Monroe county, I found that people had quite forgotten what they used to call saleratus. The virtue of carbonate of soda in bread-making is the carbonic acid it contains; the bi-carbonate of soda contains twice as much of this as the sub-carbonate (salsoda), both being dry. The carbonic acid is liberated by cream-of-tartar (bi-tartrate of potash), thus introducing potash into the bread. It is easily seen that if sub-carbonate of soda be used for a given amount of carbonic acid required, the quantity of soda and potash left in the bread will be twice as much as when bi-carbonate of soda is used; so that the bread costs more, while it is not so good. The bi-carbonate of soda commonly sold and used does not contain half the virtue its name indicates; much of it is little better than salsoda, a little dried and pulverized; salsoda, crystallized, holds 63 per cent of water, and when dried in the air, 31 per cent. In Europe, instead of cream-of-tartar, tartaric acid is much used. If potash is so deleterious as represented here, we must banish cream-of-tartar, and substitute tartaric or some other innocent acid.

Mr. Fisher—A machine for making bread is being built in Jersey City, which dispenses with yeast and every kind of baking powder. The flour is mixed with salt water charged with carbonic acid at 150 lbs. pressure, in a cast iron cylinder, the whole stirred up and kneaded by revolving knives like a propeller, and when the dough is uniform, a valve is opened at the bottom, it passes out in a constant stream two inches in diameter, immediately expanding to five inches. The dough then only needs to be cut to the proper size, when it is ready for baking.

The President—The subject of discussion is an important one for every man; yet I do not look for any effect on the public of a discussion here or in any other place. Nothing but a general advance of civilization will prevent people buying an inferior article because it is cheaper.

The subject was ordered to be resumed at the next meeting; and Messrs. Fisher, Stetson and Johnson were appointed a committee to give their views on the Patent Laws.

A PERFORATED CASE.—In the composing-room of the SCIENTIFIC AMERICAN, we have had in use for several months, a composing-case (invented by W. A. Hunter, of Bryan, Ohio), the bottom of which is made of zinc, and perforated with small holes to permit the escape of dust. It works well, accomplishing the object for which it is intended, that is, keeping the case clean. We have noticed this case favorably once before; but its continued efficiency prompts us to again recommend its adoption by the professors of "the art preservative of all arts," throughout the country.