POISONOUS FRYING PANS.

When our rival tea dealers began to offer badly printed and gaudily colored chromos to draw custom, it was thought that this form of trade debasement had reached its lowest development. The tea men of Dublin, however, have gone on from æsthetic to physical poisoning, and have distributed throughout that city large numbers of frying pans coated with an alloy of tin and lead, the use of which has resulted in numerous cases of serious poisoning. At a late meeting of the Section of Physical and Experimental Science of the Royal Dublin Society, Dr. Reynolds, the president, exhibited one of these dangerous frying pans, which had been sent to him for analysis. The pan was of the ordinary sheet iron sort, but instead of having the usual coating of tin, was covered with an alloy very rich in lead, making it exceedingly dangerous to public health. On inquiry, Dr. Reynolds had found, he said, that large numbers of those pans were being presented with more or less large quantities of tea through the city, and he might tell them that the friend of his who suffered from cooking conducted in one of those pans had nearly lost her life. Her servant—a very much stronger person—consumed very much more of the food that was in the pan, and consumed not only the sausages, he believed, but, foolishly enough, took also of the gravy, or whatever it was, and accordingly took a larger dose of the lead. Not only did she suffer from very serious symptoms, but was obliged to go to the hospital, and he did not know whether or not she had yet left it. Of course, in some cases, a small dose of the lead might do little or no harm, but there were many chances that an amount of lead which must be considerable, taken up by any acid-producing food, might enter the system, and positively cause symptoms resembling in some respects, as all kinds of irritant poisons did, those of cholera, and it was possible that many cases of death, which might be set down readily enough to ordinary English cholera, might have been produced by the introduction into the system of considerable quantities of lead.

On being asked how to detect the dangerous frying pans, Dr. Reynolds described and experimentally illustrated the following simple method. A little nitric acid diluted with water was boiled in the suspected pan. The mixture was then further diluted with pure water and poured into a clean vessel. The presence of lead was shown by adding a little iodide of potassium, which produced at once a yellow precipitate of iodide of lead.

The tea dealers had probably bought these pans to "give away," because they were cheap, knowing nothing of their dangerous character. Whether any of the sort have reached our markets we do not know. It would be well, however, for buyers to be on their guard. Five cents' worth of iodide of potassium and nitric acid, which can be had of any druggist, would suffice for the test.

CARP CULTURE.

A leather-back carp, weighing 7½ lb., has lately been taken in the government ponds at Washington. It was one of the original fish brought to this country by Mr. Hessel three years and a half ago. This shows a rate of growth far exceeding that of the same fish under similar circumstances in Europe. Several marked advantages are claimed for the German carp for profitable cultivation. Any kind of pond, no matter how restricted, can be used. Difficulties of temperature or purity of water are scarcely factors in carp culture. Providing the water is not too cold, carp thrive rapidly. In fact, no natural water has yet been found too warm for them. Being vegetable feeders, carp thrive on the plants growing in the water, or may be given offal, like pigs, or boiled grain, like chickens. A large pond may be dug on arable land, allowed to grow carp for two or three years, the fish marketed, and the ground be brought under culture again.

The profitableness of carp culture is shown by the following experience reported in a California paper. A gentleman in that State bought six carp in January, 1876. One of them soon died. From the other five he raised the first year 2,044 fish, and the year after 2,672. In 1878 he sold two of his old fish, and raised 4,000 from the remaining three. He had four shallow fish ponds, costing $50 each, and covering about half an acre of low ground comparatively worthless for other uses. For his original fish he paid $30, and $10 for food stuff, making a total outlay of $240. In four years he sold $415 dollars' worth of fish, and had from 4,000 to 6,000 left, after supplying his own table with fish for eighteen months.

There are thousands of small ponds throughout the country which might, with little trouble and large profit, be converted into carp ponds.

STOVE CASTINGS.

In a communication, too long to print, Mr. L. H. Bingham, of Harmor, Ohio, suggests several possible improvements in stove castings.

As a rule, he thinks too little metal is put into modern castings. He finds the lining of stoves not more than one-eighth of an inch in thickness, when three-eighths would be too little for durability. In one type of cooking stoves—a very pretty, convenient, and popular pattern—the flue divisions are not half thick enough to stand the heat, and the door frames are equally deficient in weight.

Mr. Bingham notes also that stoves with boiler attachments cannot be used for baking without having the boiler in place and full of water. To remedy this defect he proposes the insertion of a damper so constructed as to shut up closely between the boiler and the flues, and, when desired, to let down under the boiler, for the boiler to stand on when in.

Another suggestion is that stoves with boiler attachments be cast with a straight back, so that the boiler may be removed at pleasure, or used as a fruit drier. This, he thinks, could easily be done by casting the back of the stove straight, with the back wall in two parts, the upper section slipping in or out at will. By slightly modifying the present construction of such stoves and giving them a straight back, they can easily be made to take on any style of back attachments that may be cast for them.

MUYBRIDGE'S ZOOGYROSCOPE.

Our readers will recall the interesting illustrations of the motions of a trotting horse, drawn from Mr. E. J. Muybridge's instantaneous photographs, which appeared in this paper, October 19, 1878. The suggestion then made that the motions of horses and other animals might be happily exhibited by an arrangement of such photographs in connection with a zootrope has been carried out; and, according to the San Francisco *Call*, of May 5, a private exhibition of the device had been given by Mr Muybridge in the gallery of the San Francisco Art Association. Mr. Muybridge calls his instrument a zoogyroscope. It is described as a circular glass having a series of photographs of the animal to be represented in motion, the photographs being successively illuminated by an oxyhydrogen lantern, as the glass is turned, throwing a single continuous yet ever-changing picture upon the screen.

While the separate photographs had shown the successive positions of a trotting or running horse in making a single stride, the zoogyroscope threw upon the screen apparently the living, moving animal. Nothing was wanting but the clatter of the hoofs upon the turf and an occasional breath of steam from the nostrils to make the spectator believe that he had before him genuine flesh and blood steeds. In the views of hurdle leaping the simulation was still more admirable, even to the motion of the tail as the animal gathered for the jump, the raising of his head, all were there. Views of an ox trotting, a wild bull on the charge, greyhounds and deer running, and birds flying in mid-air were shown, also athletes in various positions.

NEW YORK ACADEMY OF SCIENCES.

A meeting of the New York Academy of Sciences was held Monday evening, May 17, 1880, President Newberry in the chair.

Prof. Newberry exhibited a specimen of Hübnerite from Dakota. The tungsten in this mineral is replaced in part by manganese. Prof. Egleston remarked that the specimen was not so brown as Hübnerite from other localities, and that it probably contained less manganese. An analysis would reveal whether Hübnerite is really a distinct species.

A NEW PROCESS FOR PROTECTING GOODS FROM MOISTURE.

Prof. Kroeh exhibited some samples of delicately colored silks, velvets, and other fabrics that had been treated by a new process for the purpose of making them shed water. He showed that untreated portions of these goods were quickly wetted through when water was poured upon them, while the water rolled off in drops like globules of mercury from the treated portions. The inventor, Mr. D. M. Lamb, of New York, gives the name of Neptunite to the material by means of which this result is obtained. It appears to be some preparation of rubber dissolved in naphtha, but its accurate composition or the details of its preparation are not made public. It differs essentially from water proofing in that it does not fill up the pores and meshes of fabrics, but impregnates their fiber, leaving the air to circulate freely through them. Wearing materials of all kinds, such as silks, satins, velvets, woolen and cotton goods, kid gloves, ostrich feathers, furs, carpets, have been treated successfully without injury to the most delicate tints. Arnold's writing fluid, coffee, and claret have been spilt upon delicate silks so prepared and washed off again without leaving a trace. Ladies attired in such materials may brave the dampness and rain unscathed, and it is whispered that even their crimps may be made to keep their waviness by this means. It is claimed that the wearing qualities of goods are not only not injured but positively improved by the operation of rendering them water repellent. If this prove true, the company formed to introduce the process, under the presidency of the Hon. Hugh McCullough, is likely to reap a rich harvest; for no one will want to wear any other kind of goods. It is claimed, furthermore, that water-repellent fabrics will neither shrink, mildew, decay, nor be attacked by moths. Time alone can show how well founded these claims are.

A communication from the council was read recommending to the Academy that the resignation of Dr. Martin be not accepted. A vote was taken, and the recommendation of the council was unanimously sustained.

Prof. Thomas Egleston then delivered an address

ON THE ORIGIN OF GOLD NUGGETS AND OF ALLUVIAL GOLD DEPOSITS.

Placer mines, in which gold nuggets are found, consist of alluvial deposits or ancient river beds. By far the greater portion of the gold in them is in a fine state of division. Near the surface the deposit is worth perhaps 30 or 40 cents per cubic yard, while further down it may reach a value as high as a dollar and a half. The commonly accepted explanation of the occurrence of nuggets in these places is that they were the result of the breaking down of auriferous quartz veins. This, Prof. Egleston maintained, could not be the case, because of their mammellar structure and chemical composition. Their structure is not such as would result from the transportation by water of the laminated gold of quartz veins. The latter, too, is often quite impure, being alloyed with silver, sometimes to the extent of 66 per cent, while the gold of nuggets is almost perfectly pure. In view of these considerations, and on the basis of the experiments directly to be described, Prof. Egleston proposed another explanation, declaring, as he said, with confidence, though not without expecting to be contradicted, that the gold in question was produced by deposition from solution. Gold, he said, had hitherto been considered by chemists as one of the most insoluble substances in nature, but in reality it is quite soluble. Sonnenstadt had shown that every ton of sea water contained 0·9 gramme of gold. This quantity is indeed extremely minute, but it must be remembered that nature is able to compensate for this minuteness by continuing her operations through thousands and millions of years.

The speaker's own experiments continued during the last five months show that gold is soluble at high temperatures and pressures in a variety of other solvents. Spongy gold exposed to the action of ammonium nitrate during that length of time imparted a distinctly yellow color to the solution. Faint traces were also found in solutions of bromide and iodide of potassium. Some of these solutions were exposed in sealed tubes to a temperature of 154°, and then to 214°. With solutions of sodium chloride and sodium carbonate no trace of gold was obtained. In another series of experiments 50 c.c. of water, containing about one-quarter gramme of gold, were exposed in vials, one with 1 c.c. of petroleum, and the others with one-half gramme of leather, leaves, and peat, and one-quarter gramme of cork. After five months the vial containing petroleum was found to contain upon the surface of the liquid minute crystals of gold, visible in strong sunlight. They are probably hexagonal prisms terminated by rhombic dodecahedra. The leather and cork were found to be entirely pseudomorphed. The action of the peat indicated that the presence of the organic acids of the soil favored the precipitation of the gold. Prof. Egleston believes that these and other experiments now going on in his laboratory warrant the conclusion that the gold of nuggets and alluvial deposits is due to chemical solutions filtering through the soil and precipitating their gold. This may account for the tradition prevalent among miners of the Carolinas and Virginia, that an abandoned placer left undisturbed for about twenty years, will yield a new crop of gold that may be even richer than the first.

Prof. Egleston concluded his address by describing some experiments on the nature of the so-called rustiness of certain kinds of gold, a property that prevents it from amalgamating readily. In deep placer mining the amount of gold actually obtained is only thirty-three per cent of the amount shown by the assay. Hence the importance of investigating the causes of the loss. Gold heated and cooled slowly will amalgamate at once, if heated and cooled suddenly it will not. A momentary immersion into sulphureted hydrogen or ammonium hydrosulphide prevents amalgamation. To test the statement, that the presence of four-thousandths of antimony prevented the amalgamation of Callao gold, he alloyed some gold with three or four per cent of antimony, but found that it would readily combine with mercury. He had also succeeded in dissolving out all the mercury from an amalgam, thus showing that it was not a definite compound.

The paper was discussed by Profs. Julian, Leeds, and Newberry. The latter asserted his belief that gold was doubtless extensively deposited from solution, but did not think nuggets were formed in this way. They are always found in connection with quartz veins, and do not differ essentially from them in composition. C. F. K.

MILK AND BUTTER PRESERVATIVES.

A high German authority in dairy matters, Dr. De Kleuze, of Munich, says that the preserving compounds so widely advertised are nearly always composed of varying proportions of bicarbonate of soda, sometimes mixed with common salt, boracic acid, borax, mixtures of borax with common salt, salicylic acid, and of late a mixture containing half of boracic acid and half of sulphate of potassium. Bicarbonate of soda has been in use a long time, and is still largely used. It acts by neutralizing the lactic acid which is formed in the milk, but its action is not satisfactory, as it is liable to give the milk a soapy taste. Salicylic acid is also unsatisfactory as well as expensive. Boracic acid is a powerful antiseptic, and preferable to borax.

For dairy use Dr. De Kleuze finds the above-mentioned mixture of boracic acid and sulphate of potassium superior to all other preservatives, and perfectly harmless as well as cheap. It can be obtained at any druggist. Sixty grains to a gallon of milk or a pound of butter is sufficient to prevent souring or rancidity.

Electric Lights on Buoys.

The whistling buoys now in use weigh about fifteen tons each, and in their plunging, even during calm weather, a force of nearly three horse power is evolved. To utilize this waste energy Mr. Edison has devised a small dynamo machine to be carried by the buoy, the current from which will sustain an electric light equal to one gas jet. If successful, these self illuminating buoys must be of great use to mariners.