

and unscrupulous people—too many of them to the manor born—should take advantage of the credulity of the undeveloped citizen, to their own gain and their victim's detriment. Such is the natural consequence of the mixture of diverse grades of civilization. All we claim is that, with time and widening experience, the over-credulous have their wits sharpened and their eyes opened; and if it were not for the constant accession of raw material to be imposed upon, humbugs would die a natural death, even in this favored land of humbugs.

Dr. Schnauss's illustration of American iniquity (so-called) is a case in point. He charges us with the invention of "spirit photography;" then serenely proceeds to demonstrate that his own countryman, Baron Reichenbach—aided and abetted by "a large number of scientific men"—produced the first spirit photographs, in the capital of German intellect, Berlin. What is even more amusing, our learned Doctor goes on to state, as a demonstrated fact, that "several bodies appear luminous to people after their eyes have been accustomed to darkness, as for instance large steel magnets and big crystals; water shaken up in a bottle will emit phosphorescence, and luminous waves may at times be seen coming from the fingers, sometimes greenish, sometimes reddish, according to the side of the body."

We have been laboring under the impression that these pretended appearances were in reality all in the observer's eye—illusions, in fact, the "sensitive" witness seeing simply what he looked for: a position supported by not a few experiments, wherein the doubly deceived observer was led to see what from his own theory could not exist—"magnetic" flashes, for instance, proceeding from a wooden magnet(?) deceptively painted. But to Dr. Schnauss they are actual verities, as he has "seen similar luminous phenomena in the persons of somnambulists." He has gone further, and repeated, "with great care and attention," the photographic experiments of the father of spirit photography, on the strength of which he renders the verdict that the luminosity emanating from one's fingers' ends, etc., as seen by very sensitive persons, is not, as Reichenbach supposed, identical with solar rays!

If the Doctor is a fair specimen of his country's intellectual productions, we may at once abandon all hope of eliminating humbug, so long as emigration continues. Supply always follows demand. But we will give our censor credit for one thing: he has learned, though tardily, what was shown long ago in the SCIENTIFIC AMERICAN, that a genuine "spirit photograph" may easily be obtained, provided the precaution be taken to sketch the required ghost upon the back ground with some colorless fluorescent material, as, for example, a solution of sulphate of quinine. Though invisible to the eye, such a sketch will appear in the picture, as perfect a ghost as the most credulous could wish to see.

ONE OF MR. EDISON'S CURIOUS EXPERIMENTS.

If the dark box (illustrated in SCIENTIFIC AMERICAN of December 25, 1875) provided with two carbon points be brought within a short distance of any of the working telegraph sounders, used at the Western Union Telegraph Office, Dey street and Broadway, the sparks, heretofore described by Mr. Edison, he states, at once make their appearance between the points. The flashes thus produced correspond with the opening and closing of the circuit of the magnet, and thus the signal or message that is passing through the instrument is reproduced in the form of light, within the Edison box. No connection of the carbon points by wires with the telegraph instrument is necessary. Simply bringing the box near to the instrument is sufficient.

WHO INVENTED THE BARREL?

Few inventions have had a wider or more varied usefulness than the barrel; few give such promise of perpetuity. Unique in principle, simple yet singularly perfect in plan and structure, the barrel is little less than a stroke of genius. Who set up the first one? Who first conceived the happy thought of making a vessel tight and strong out of strips of wood bound together with hoops? And when did he live?

No history of inventions, none of the encyclopedias in our great libraries, no historian of human progress, so far as we know, gives any information on the subject, unless we except the Roman author Pliny, who mistakenly attributes the invention to the Gauls who inhabited the banks of the Po. We say mistakenly, since there is the best of good reason for believing that the barrel was in use long before the Gauls took possession of their Italian home, perhaps long before the Gauls existed as a people.

The monuments of Egypt furnish proof of the early use of hooped vessels, though no date is given of their invention. In one of the inscriptions copied by Wilkinson may be seen two slaves emptying grain from a wooden vessel made with hoops, while a scribe keeps tally, and a sweeper stands by with a broom to sweep up the scattered kernels. Close by an unfortunate is undergoing punishment by bastinado, for short measure perhaps, or, as Mr. Wilkinson suggests, for petty theft. The measure is barrel-shaped, and precisely like the *kayl* of modern Egypt. It would hold, apparently, about a peck. Unfortunately the age of this inscription is not indicated. Measures of the sort would seem to have been in common use very early in Egypt, though not for the storing of liquids, for which purpose skins and earthen vessels were employed.

At first thought, Egypt would be the last place to look for the invention of hooped vessels, its arid climate making it specially unsuited for their employment. Possibly, however, that may have been the compelling cause of their invention.

Throughout the East, the bamboo is largely used for making

hollow vessels, a section of the stem through a node securing a solid bottom, and one between the nodes an open mouth for a natural tub or bucket. In well wooded regions, nothing would be more natural than the employment of hollow tree trunks for the same purpose, or sections of tree stems, hollowed out by fire or otherwise. In drying, such vessels would split and spoil, and it would require no great genius to repair them by means of withes or wooden bands, the primitive form of the hoop.

If the users of such natural barrels should migrate to a region where timber was scarcer, economy of lumber would be likely to suggest the building of barrels from pieces artificially split, in short, the use of staves, by means of which the primitive cooper would be able to make several barrels out of a block that would suffice but for a single dug-out.

But this is speculation merely. It is enough to know for a certainty that the cooper's art, like the potter's, is one of extreme antiquity. We had no suspicion of its venerableness when we began to trace its history in response to the inquiry—who made the first barrel?

LOWER CALIFORNIA.

Peninsular California has had the name of being about as worthless a strip of land as the Continent affords—rocky, sunburnt, and barren. Its inhospitable mountains, however, appear to be well stocked with precious minerals, and its shores are not without the elements of fertility for other lands, even if themselves are infertile. The United States steamer Narragansett has been making a survey of the coast, the reports of which show that the mineral wealth of the country is wonderful, embracing rich deposits of silver, gold, iron, copper, antimony, alabaster, and salt. At Triunfo a silver-mining company is producing bullion to the amount of \$50,000 a month. The mines are very rich. At Purgatoria and Providencia copper mines are being actively worked, and are yielding large quantities of rich ore, which is brought to the seashore on pack mules to be shipped to San Francisco and Europe. At the island of San Marios, there is a rich mine of alabaster, capable of yielding an immense profit if properly worked. At Carmen Island is a salt deposit a mile and a half long and a half a mile wide, depth unknown. The salt is pure and beautifully crystallized. It lies in a natural evaporating pan some 400 yards from the sea, with which it is connected by underground passages. Another source of wealth is the guano islands, especially Isla Raza, from which 10,000 tons of the fertilizer have been taken. It is computed that as much as 60,000 tons more lie upon a strip of shore three quarters of a mile long and half a mile wide. The Gulf of California abounds in whales, sharks, swordfish, saw fish, skates, porpoises, seals, turtles, and small fish in great variety. The presence of fossil shells of existing species, at an elevation of 1,000 feet or more above the present sea level, indicates that at a geologically recent period the peninsula was an archipelago, the high mountainous land at the southern extremity forming a single large island.

A California paper reports the recent arrival in San Francisco of the first successful shipment of canned turtles from Guaymas. The turtles of the Gulf are very abundant, and are equal in flavor to the best West India turtles; but they suffer on the voyage so that they cannot be brought alive to the California market. By canning them, it is found possible to place their much appreciated meat, in excellent condition, within the reach of all at moderate prices. Guaymas alone can furnish 200 tons of the meat annually. The turtles weigh from 25 to 250 lbs., but they will not average more than 15 lbs. of meat, so great is the proportion of refuse. It is expected that canned lobsters, cuttlefish, rock cod, and other delicacies from the Gulf will soon be added to the food resources of the Pacific coast.

RAPID BRIDGE BUILDING.

On the 20th day of November last, the Market street bridge, over the Schuylkill river at Philadelphia, was, with the exception of its piers and abutments, destroyed by fire. The loss was a very serious one, as the bridge formed the principal connection between West Philadelphia and the city proper, while over it passed the tracks and large traffic of the Pennsylvania railroad. It was, besides, the most direct route to the Centennial grounds. So urgent was deemed the necessity of replacing the structure that, before the flames were fairly quelled, the mayor's proclamation was issued, and consultations of city authorities and engineers speedily began. Before these deliberations, however, had resulted in any definite project, President Thomas A. Scott presented himself at the mayor's office, with an offer to build a strong bridge with double the capacity of the one destroyed, to cost \$65,000, or \$10,000 less than the insurance on the latter. Furthermore, he would sell the structure to the city for exact cost, and have it ready for traffic by January 1, 1876.

Mr. Scott had anticipated the acceptance of his offer, and had already sent out orders to cut the timber, at various points along his road, and load it on cars. When the formal acceptance came, further commands flashed over the telegraph wires, and down came the loaded cars, attached to the lightning express trains. One hundred and fifty men stood ready on the banks of the river, tools in hand, and at the word given, on the evening of December 5, the attack on the charred remains of the old bridge began. From that moment work was unceasing; one gang of men relieved another, and torches and calcium lights gave illumination all night. Sundays and stormy days were unnoticed, and thus the labor continued, until, at one o'clock on the afternoon of December 24—three hours less than twenty-one days from the time the mayor signed the ordinance, and seven days ahead of time—the bridge was finished and formally opened to travel.

The structure—though of course but a temporary one, since it is designed at some future time to replace it by one of iron or stone—is solid and massive, and good for five or six years of constant wear. In fact, it would last indefinitely with proper repairing and replacement of timber from time to time. It has a Howe truss, and is constructed of white pine, with an oak flooring. It is 540 feet in length, the two end spans measuring 162 feet each, and the center span 216 feet. The truss is 26 feet high in the clear, and 28 feet from out to out. The width of the bridge is 48 feet including the sidewalk, which is 10 feet wide. The new structure is said to be superior to the old one. The proceeding is an example of what energy and discipline can accomplish.

WATER IN THE PIPES.

At this season of the year, and especially during cold snaps, the gas has a habit of misbehaving itself in an annoying and, to most people, incomprehensible manner. At night, and just as *paterfamilias* is about to retire, he is startled by an ominous drip, drip, apparently in the floor, sounding exactly like the escape of water from a burst pipe. With visions of soaked carpets and ruined ceilings running across his mind, he makes his way to the story beneath, with the expectation of sadly looking upon a gradually growing dark stain in the middle of the plastering. None is there, however, and he tries another room with the same result; then he goes to the kitchen and shuts off the water from the upper stories, but still the dripping sound continues. Finally, in the course of a critical inspection of the wash basins, he lights the gas in an unoccupied room, and at once the flame proceeds to execute a series of astonishing leaps and jumps. Of course, he establishes a connection in his mind between the sound in the floor and the performance of the gas flame, and thereupon, with a sigh of relief that it is only the gas, bears the less evil resignedly, out of thankfulness for the absence of a possible greater one.

Next time the trouble happens, it may occur in the parlor and ruin a projected entertainment; or in the midst of a dinner company the gas may suddenly proceed to dance and then obstinately go out, either of which proceedings will result in the discomforted host employing a plumber early the next morning. That worthy will arrive at his leisure, of course, with a helper and a couple of small boys and some candles, and with the aid of an air pump proceed to force some water out of the pipes, and thereupon send in a huge bill. In about a month, or after a few more very cold days, the gas will repeat the performance, and the plumber will find another golden opportunity, and this will be continued at intervals through the winter.

If the luckless householder venture to ask the plumber what the trouble is, "water in the pipes" will be all the information vouchsafed, and the questioner will be none the wiser as to how it got there or how it is to be kept out, other than by employing the man of lead and solder and his several attendants, which is exactly that individual's object. But we will tell you, reader, what the cause is, and how to avoid it. The true sources of the difficulty are gas traps, which are low points or depressions in the pipes, due to the latter being carelessly put in. During moderate weather, when there is no condensation of the gas, and hence no formation of water, these give no trouble; but when water does form, it of course settles in these depressions, and either shuts off the gas altogether at points beyond, or else allows the gas to pass fitfully, producing the jumping of the flame. It is obvious that forcing the water out is only a temporary remedy; and that the only proper mode of getting rid of the difficulty is either to take out the pipe and put it in straight, or else tap it at the depression and add a drip large enough to hold a pint of water. A foot of two inch gas pipe makes a drip which will rarely or never fill up, and which answers excellently for the purpose. It is often found that chandeliers fill up with water during cold weather, owing to the parlor drop being led directly from the main pipe, thus drawing into the chandelier the water which otherwise would run down the rising main to the meter. The proper plan is to cross over from the main pipe, no matter how short the distance, and then add the drop.

If occupants of city houses will bear the above in mind, and see that the plumbers strike at the root of the evil as we have pointed it out, they will save themselves sundry annoying bills, and no small amount of inconvenience.

The Localities of Malaria in the City.

The Health Board is endeavoring to ascertain the different localities on the built-up portion of this city subject to strictly malaria troubles. Not only is this inquiry to be confined to intermittent and remittent fevers, but to all the obscurer diseases in which the element of periodicity is sufficiently well marked to cause suspicion. A map of the city is sent to each physician, with the request that he will indicate the precise situation of each case of the sort which he may be called upon to treat, and transmit in due time the results of his labors. This is matter of the greatest possible importance in connection with the true sanitary interests of the city; and it is to be hoped that the every medical man will do his utmost to second the endeavors of the Board and offer to it any suggestions which may tend to promote the end in view. It is by the accumulation of such reports that a scientific basis can be made for an accurate estimate of the means which may be necessary to remedy the evil.—*New York Medical Record.*

THE band saw of Messrs. Emerson, Ford, & Co., of Beaver Falls, Pa., took the \$100 gold prize at Cincinnati this fall. It was used on a J. A. Fay & Co. re-sawing machine, and distanced two French band saws in the competition.