Correspondence.

How to Clean Gauge Glasses.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of December 17 you recommend cleaning water gauge glasses with pine stick and cotton cloth swab. We have used the above, also soft cotton waste drawn through the tube, but find the best annealed Scotch glasses break in a short time after cleaning. We then used slightly diluted muriatic acid, which cleaned them nicely without using any solid substance in the aperture of the glass. The acid can be used a number of times, by keeping in a long necked bottle. In cleaning the glass, immerse in the bottle for a short time, wash in clean water, and replace in water column. I have used the above, and know it to be good. EDWIN S. LEIGH.

Clayton, N. J., December 19, 1887.

Lunar Photography.

To the Editor of the Scientific American:

Mr. Henry C. Maine, associate editor of the Rochester, N. Y., *Democrat and Chronicle*, and an enthusiastic amateur astronomer, has recently produced some photographs of the moon of very great excellence. The instrument used was a silver on glass reflecting telescope of thirteen inches aperture and seventy-eight inches focal length, of Mr. Maine's own construction. The image of the moon at the principal focus is about three-quarters of an inch in diameter, but in the latest photographs this image is enlarged to about 1¾ inches diameter by means of an amplifier or Barlow lens. A negative image is in this way secured directly of the above dimensions. The brilliancy of the focal image is so great that drop shutter exposures are possible, and the negative is very sharp and well defined. The writer recently had the pleasure of examining contact and enlarged paper prints of these negatives, and was surprised at the amount of detail shown therein. The enlargements were fifteen inches in diameter, and represented the moon at about the first quarter, and full phase, and reflect the highest credit upon Mr. Maine's skill and perseverance. They were recently used to illustrate a paper read by Mr. Maine, before the Rochester Academy of Science, on "Lunar Photography," which elicited great interest. WM. R. BROOKS.

Red House Observatory, Phelps, N. Y., Nov., 1887.

Remedy for Ivy Poisoning.

To the Editor of the Scientific American:

In your paper of November 5 you have an article on ivy poisoning. I beg a small space to give my personal knowledge of the effects of the vine on different persons. I had a brother who was very sensitive to its effects. If he came into contact with the smoke in burning brush in the spring when repairing the fences of the farm (which usually had a deal of the vine running on them), all that portion of his body that was exposed to the smoke became much swollen, and it took a long time, with much medical skill, to give him relief. He made a visit to California in 1859, and on his return I was surprised to see him walk up to an ivy vine and bite off and eat the twigs, and rub them over his face and arms. He explained that during his stay in the gold mines he got in contact with the ivy and became terribly poisoned, so much so that he was perfectly blind. An Indian who was there said he could cure him. He got some of the young shoots of the ivy and bruised them and made two quids, put them into his mouth and told him to chew and swallow the juice, which he did, and was a well man in a few hours. I had two sons at that time about eight and six years old; they were present at the time, and seeing their uncle eat the ivy, so soon as they were alone, got to eating it. They came to the house with a bunch of the twigs, and I was much alarmed to see them with it, but it had no bad effects, and they are now men, and can handle it with impunity. I dare not go where it is, and I have two other boys that are like me; but I cannot summon courage enough to try the remedy. Perhaps some of your readers who are afflicted can. I give simple facts in the case for the curious to test. The remedy is alleged to be permanent and to render the patient "ironclad" to all future contact with ivy. S. E. R.

Mathews C. H., Va.

Economy.

To the Editor of the Scientific American:

The advance in modes of heating in districts where petroleum or natural gas is freely found makes the coal cart and wood wagon objects of ridicule, obsolete remnants of a barbarous age. With us, not a hundred miles from Toledo, fashion, if nothing else, compels the "paterfamilias," in order to keep peace in the house, to use natural gas; the cost varying from $20 to $35 per annum for each heater, according to size, so that an ordinary dwelling house, with kitchen, dining room, sitting room, and parlor, will cost about $100, and the extra charge of fitting. With a bathing room, a conservatory, a study, a workshop, or an extra room or two for visitors, the annual bill may easily amount to double this amount. Now, coal oil is in many places nearly worthless, and fifteen cents per barrel, even twenty cents (barrels to be furnished by buyers), appears so cheap that when its heating power is compared with hard or soft coal, the former at $7 and the latter at $4.50 per ton (2½ to 3 barrels crude petroleum oil yielding about as much heat as a ton of coal), students of economy inclined to advance with progressing humanity, and especially readers of the SCIENTIFIC AMERICAN, may be excusable for experimenting in the crude oil heating field—an unexplored and mysterious area of vast and highly promising dimensions. I became an explorer in this *terra incognita*, visited various places where crude petroleum was used as a substitute for coal, and found that, with sufficient air pressure, or injected with and by steam, it worked satisfactorily in furnaces, for mills, machine shops, even in the largest (Oakland and San Francisco) ferry boats. I saw it burn on water, from asbestos packing, charcoal, on cast iron plates, iron cups and saucers; saw an ingenious arrangement to generate steam, produce an air blast in a cheap and compact little apparatus for cooking stoves—a splendid thing, provided the cook would not object to have a nice engineer engaged to keep the apparatus in working condition. Finally, intending to protect home industry, I chose a plain, substantial device—not yet patented—secured 5 barrels of crude petroleum, cost about 1½ cents per gallon, including transportation and delivery, and began operations.

Oh, my! what a horrid stench! (The mother of my children has an acute organ of smell, and one of the petroleum barrels leaked considerably, and the driving of the hoops on the slippery sides made it bleed more freely yet.) But this was outside in the yard. I found out it keeps stray dogs and tramps away, and promises to last an indefinite time. Work soon began. A new brick outhouse received a tank in the second story, from which pipes were laid to my office, the coal stove remodeled and inlet pipes, stop cock, etc., adjusted. The oil was admitted through a ¼ inch open pipe, against a 2½ by 3 inch inverted cast iron cup, resting on a 6 inch flat, round iron plate, the latter centrally screwed on a circular pot, with partly open sides to admit draught, and an open tube to regulate and exclude all but bottom draught. As a pretty well skilled workman, I got everything in good working order before I admitted the first crude oil. Oh, what hidden glories there were in waiting for an unsophisticated mind! Do any of the readers know how an isolated volume of air works, even in a water pipe? It seems to act as an elastic cushion, until something gives, and, in my case, it was crude petroleum of the usual fragrant quality that filled the stove and, oozing out of the four rod holes, soaked my office floor, before I could imagine why the open stop cock failed to let any oil pass. It came on its own accord, and made up for lost time.

My wife—well, she did not stay long. I scooped and mopped and scraped, and lit my stove. Oh! how it roared! Glory hallelujah! I had my stove red hot in a few minutes. I shut down my valve and it gradually assumed a milder tone, and suddenly it went out. I let on a little oil again, but only smoke, white, dense smoke, issued. I let on more oil and lit a match, opened the door a very *leetle*, and I had a first class surprise party. I have not much hair to lose, but I may save one-half of the barber's fees. I looked much younger. My gray whiskers had their former younger color, and what my eyebrows lost in hair they gained in compactness and color. The stove lid failed to hit me, when it came down from the ceiling, but the accompanying soot hit everything. My wife calls it of a greasy, sticking character. It gives her much trouble. The hinges of the stove door are well constructed. They became used to these explosions. Well, I managed by close attention to get along a few days with an occasional surprise party, assembled in various dishes, as cans, cups, and pans, a fine by-product, a heavy lubricating oil, that seems to get everywhere and always sticks, used about a cake of soap and half dozen towels to clean my hands, and a peck of sawdust and untold quantities of rags a day, to gather up the remnants of incomplete combustion from the floor, tin plate under the stove, and the cup in the stove. Finally discarded the inverted cup—one improvement; then unscrewed circular plate and threw it out—another improvement; and then I thought I got on top of the hill; but the cold weather came, the oil would not run, the fire went out a dozen times an hour. I overhauled the apparatus, cleaned it out, used two coats up, and cuffs! I think the stuff is the best indelible marking ink out. Well, my wife, she had to help me this time. "Now, you hold your finger over this pipe and raise your hand as a signal, when you feel the oil come, and then quickly close the valve." I hastened to apply a well working air pump to my tank in the outhouse, watching through the open door and window my wife's anticipated signal. I pumped lustily, the chinks and bulges of my tank came out with a report, but I only saw my wife run. I stopped pumping, made haste down stairs, across the lawn, up stairs to my office. Well, the surprise party was on my wife, the treacherous pipe failed to work. First, she let go her finger to look, then it worked with a will (my air pump is a daisy). She—my wife—was excusable. She could not see the stop cock, and under the pressure of the condensed air my petroleum fountain worked nicely, until I turned the stop cock. *My office floor is painted now.* I made peace with my wife. Three days after she had natural gas all over the house. But I am writing to the music of my crude oil stove yet. Never give up. Just finished a second crude oil burner for a cellar and greenhouse above. I find the mastery of this subject is elevating (sometimes stove lids), and is a trial for a religiously constructed temperament. It is a labyrinth in which the seeker for an exit can educate a fine power of observation, study expansion of fluids and solids, and like the hunting dog in last SCIENTIFIC AMERICAN, trace his master by the smell. Crude oil is my master yet, but I am about mastering it. Will be ready to negotiate with some one of large means to secure a patent for the coming event. K.

A Channel Bridge.

The following details of a proposed bridge across the English Channel are taken from a French contemporary: The *Evenement* of October 25 states that a scheme for the erection of such a bridge is in active consideration on the other side of the water. At the head of the project is Admiral Cloue, and acting in connection with him are three well known engineers, Messrs. Hersent, Fowler, and Baker, the two latter representing England in the matter. The plans have already been prepared, and are at present being examined by skilled engineers at the Creusot Works. As the *conseil superieur des ponts et chaussees* is not unfavorable to the scheme, as soon as the plans are approved, active measures, it is expected, will be shortly begun. It is estimated that the cost will be somewhere about £40,000,000, and the time required before it can be completed seven years or more. The course proposed to be taken for the bridge is from Cran-aux-Œufs, a little place on the French coast between Ambleteuse and Cape Gris-Vert, to Folkestone, on the English side, a distance of about 22 miles. Not the shortest, but the shallowest line will be chosen. The depth of the Channel is commonly supposed to be much greater than it is in reality. There are two shallows between Cran-aux-Œufs and Folkestone where the depth is only about 20 feet. They are named the Colbart and the Warne, and they will, of course, make a material difference in laying the foundations and huge piles which will be required for this gigantic structure. From the French coast to the first of these shallows the depth is about 160 feet, and from the other shallow to Folkestone about 100 feet. The bridge will have two slight bends, the first deviating a little to reach the Warne, the other other falling back to reach Folkestone. The piles required are blocks of concrete and masonry, 160 feet long by 100 broad, and will be placed at intervals of about 550 yards. These measurements sound enormous, but it is stated to be quite possible that they may have to be increased to give the bridge a strength capable of bearing a weight of 25,000 tons. The causeway of the bridge will be about 160 feet above the sea level, so that vessels of any size may be able to pass beneath it. It will be 100 feet wide, and be divided into four lines for train service, as well as a way for foot passengers. Signal boxes and sidings will be placed along the whole length at equal distances. The bridge will be illuminated by electric light, each pile having a powerful electric lamp attached to it, as well as fog horns and alarm bells for use in foggy weather. Such are the outline details of this enormous undertaking, which the projectors state they have full confidence will be before long carried out.—*London Times.*

Nickel Plating.

M. Joseph Arene, the French Vice-Consul at Mons, in Belgium, calls attention in a recent report to a new process of nickel plating now in successful operation in his district. By this process a thick plating of nickel may be deposited upon any metal by a feeble electric current in a very short space of time. He gives the composition of the bath as follows: Sulphate of nickel, 1,000 kilo.; neutral tartrate of ammonia, 0·725 kilo.; tannic acid, 0·005 kilo.; water, 20 liters. The neutral tartrate of ammonia is obtained by saturating a solution of tartaric acid by ammonia. In the same manner the sulphate of nickel must be exactly neutralized. Three or four liters of water are at first added, and the solution is made to boil about a quarter of an hour. The rest of the water is then added, and the liquid is filtered or decanted. This bath may be renewed indefinitely by adding the same materials and in the same proportions. The deposit obtained is brilliantly white, soft, and homogeneous. Even when obtained of great thickness there are no irregularities on the surface, and it has no tendency to scale. Some very thick deposits of nickel upon both rough and polished cast iron goods have been obtained by this process at a cost scarcely exceeding that of copper.