

## Science & Mechanics.

### GAS ON OCEAN STEAMSHIPS.

In a former number we gave a brief account of the manner in which the steamships of the White Star Line are lit with gas. We are now able to lay before our readers an illustration of the apparatus, recently perfected by Messrs. J. T. B. Porter & Co., of Lincoln, for the manufacture of gas on shipboard. This apparatus, says *Engineering*, from which the our illustration was copied, was first used on board the "Adriatic," and was tested by constant use during several voyages between Liverpool and New York. The experience gained on these occasions showed that the motion of the ship, even in very heavy weather, did not affect the efficiency of the apparatus; nor interfere with its management, and the results were sufficiently encouraging to justify the owners of the same service in extending the introduction of the apparatus to other of their vessels. The one illustrated on page 397 is that fitted on board the "Celtic." It is intended to supply gas for 300 lights, ten per cent of which will be kept continually lighted.

The apparatus is composed of three principal parts, the retorts, the washer, condenser, and scrubber, and the gas-holder. The space occupied by the complete apparatus is 1,600 cubic feet, or 22 tons measurement.

There are two furnaces, placed under three retorts, which may be either worked together in pairs, or singly. The ovens and retorts are arranged so as to secure a maximum amount of efficiency with economy of fuel; the retorts are provided with diaphragm pendants, so that any leakage from the feed pipes may be distributed over the heated surfaces and volatilized. The brickwork in which the retort stack is set is enclosed with cast-iron plates, and a good feature in the design is the facility with which any part of the apparatus can be inspected, cleaned, or renewed. The washers, condensers, and scrubbers are so arranged that the water they contain is always maintained at a constant level, although the ship may be rolling heavily.

The gasholder, which is not shown in the engraving, is of special construction to meet the peculiar requirements of the situation. It consists of a holder in a tank deep enough to contain it entirely when empty. It is steadied by sufficient guides to prevent any movement being imparted to it from the ship's motion. An indicator shows constantly the amount of gas contained in the holder, by which the rate of feed of oil into the retorts is regulated.

A uniform pressure at the burners is secured by means of a governor, through which the gas flows on leaving the holder. The gas manufactured in this apparatus of Messrs. Porter & Co. is very pure and brilliant, a burner consuming  $1\frac{1}{2}$  or 2 cubic feet per hour, gives a light equal to 11 or 12 candles. The saloon of the "Celtic" is illuminated with 30 or 40 such burners, and the improvement over the old mode of lighting will be easily appreciated.

### WEATHER PROGNOSTICS.

(Second Paper.)

In the economy of Nature we find that plants, like animals, adapt their motions to their wants; some expand their flowers to the sun, and close them at eventide; others expand their flowers in the evening, open before rain, or perform various other functions, the result of their particular natures, and to which the varying states of the atmosphere are specific stimuli.

From an accurate and constant observance of these, many prognostics of the ensuing weather have been deduced; of which we insert the following on account of their great popularity:

Chickweed has been said to be an excellent weather-guide. When the flower expands freely, no rain will fall for many hours; if it so continues open, no rain need for a long time to be feared. In showery days the flower appears half concealed, and this state may be regarded as indicative of showery weather; when it is entirely shut we may expect a rainy day. Before showers the trefail contracts its leaves, as does the convolvulus and many other plants. Lord Bacon observes that the trefail has its stalk more erect against rain; he also mentions a small red flower called by the country people wincoppe, and which grows in stubble fields, if it opens in the morning a fine day follows.

The reader may consult Lord Bacon's *Sylva Sylvarum*.

We will now allude to the prognostics of the weather from the appearances of the sky. The prevalence of clouds of the modification of cirro-stratus at eventide had been noticed long before the specific nature of the different clouds was attended to—see Luke Howard's essay on the Modifications of Clouds, and on the principles of their production, suspension and destruction. Thanks to the scientific meteorologist, the clouds are now shown to be governed in their production, suspension, and destruction by the same fixed Laws which pervade every other department of Nature.

The vivid colours of red and crimson seen in the cirro-stratus cloud when the sun is near the horizon, give rise to many proverbs about the

red evening, and its favourable omen to the traveller; a remark quite as trite among country people, as the grey morning before a fair day. This, as well as the redness of the morning, is noticed in the Gospel of St. Matthew, chap. xvi. 2. There is an old proverb:

"An evening red and a morning grey  
Are sure signs of a fair day;  
But an evening grey, and a morning red,  
Put on your hat, or you'll wet your head."

The Italians have:

Sera rosa e nigro matino  
Allegra il Pelegrino.

When a dense and uniform veil of cloud covers the sky, as is often the case before rain, with a still air, music and noises are heard a great way off, which has caused the far propagation of sounds to be regarded as a prognostic of rain. The sound of distant church bells in the country often serves this prognosticative purpose. In Wales the common people say that when the mountains have their night-caps on, the rain will soon fall. The clearness of the tops of mountains is, on the contrary, a sign of the fairness of the weather.

Luminous phenomena about the sun by day, or the moon by night, being generally produced by the intervention of cirro-stratus, indicate the fall of rain, snow, or hail, according to circumstances; indeed many of the signs of rain are likewise under other circumstances of time, of year, &c., prognostics of snow. The halo is one of the most certain signs of rain we have; though it may sometimes fail in its accustomed indication. The parhellen and other peculiar refractions also forbid rainy weather. Upon the other hand, the clear and bright appearance of the moon and stars, after they have long been hazy and confused, indicates approaching serenity.

There is an old distich:

"When clouds appear like rocks and towers,  
The earth's refreshed by frequent showers."

In summer or harvest, when the wind has been south two or three days, and it grows very hot, and you see clouds rise with great white tops, like towers, as if they were on the top of each other and joined together with black on the nether side, there will be thunder and rain suddenly.

Many of these sayings and adages are generally founded on observation, and these are less likely to be compared with false and vain theories, because they are the philosophy of the unlearned, who have nothing but experience to go upon in establishing rules. Let our readers judge from time to time how far any of them are correct, and compare them with their own experience.

To enumerate all the signs of atmospheric changes which may be collected would exceed our limits, especially as we shall, at no distant time, pursue the subject under the head of Meteorological Superstitions, many of which originated in facts, ascribable to atmospheric influence. For instance, the remarkable appearance of the upright shadows in some foggy moonlight nights, as well as some curious atmospheric refractions, have probably co-operated with ocular spectra and apparitions, which so mightily terrify the country peasants. The idle tales about Pandora, and about Fortune, and many others are referable to a physical origin. The inactivity, anxiousness, and mystic feelings of some minds, viewing the great uncertainty of future events, and the casualties of life, render persons more disposed to trust to their stars than to their wits, who content themselves with praying to the goddess not to crush their fabric, and, like Horace of old, sing—

"Injurioso ne pede prorua  
Stantem columnam."

**LUMINOUS FUNGI.**—The Rev. M. J. Berkley describes in the *Gardener's Chronicle*, a very remarkable instance of luminosity in fungi. It occurred in the mycelium of an unknown species growing on a trunk of spruce or larch, and vividly illuminating everything in contact with it. It gave almost light enough to read the time on the face of the watch, and continued for three days.

**PRESERVING CHARRED PAPERS.**—The *Scientific American* says:—"Mr. E. H. Hoskins, of Lowell, Mass., has suggested a very useful and practical way of preserving and giving toughness and flexibility to charred paper, which has proved to be of much importance in the identification and copying of valuable documents, charred by conflagrations such as the recent Boston and Chicago calamities. We have seen specimens of charred papers and bank notes, thus treated, that can be handled with impunity. The printing upon the charred bank notes can be readily discerned. The preserving process consists, we believe, in pouring collodion upon the surface of the charred paper. The collodion forms a thin transparent film, dries in a few minutes, when the process is complete.

A new process for the instantaneous extinction of a conflagration is said to have been recently experimented with at Paris, and with entire success. M. de la Vielle Montagne, chemical manufacturer, of Amiens, has, it appears, discovered a resinous substance which is quickly soluble in fresh water. Such a solution, employed for the service of the ordinary fire-engines, is stated to produce the following effects:—The water is prevented from conversion into steam by the heat, and thus effectually penetrates and wets the bodies on which it falls, avoiding all the ordinary phenomena of calefaction in similar cases, by which the action of pure water is so notably neutralized. Moreover, the resinous matter would appear to give rise to dense volumes of smoke, unfavourable to flames and combustion, or even ignition.

Should always have a bottle of Jacobs' Liquid ready.

## Courier des Dames.

### BREAKAGES.

It is said that three moves are as bad as one fire; but has anyone tried to fix exactly the cat's equivalent of harm in every quiet household? These useful animals seem to be encouraged for the special benefit of domestics. Their mission is less the capture of small game than to act as the servants' scapegoat. That "the cat did it" is an excuse as old in the kitchen as the time-honoured principles of perquisites and followers. Indeed, it is open to argument whether the proverbial bull in the china shop did more mischief than puss down stairs among the crockery. Of course it was the cat. What else takes jugs of hot water up to the bed-rooms? or washes the tea things? or carries out the tray laden with tumblers and fragile glasses? The cat, unable to plead, is condemned unheard; and doubtless there are damning facts and antecedents in the cat's career to make her at least the object of suspicion. Thus, with all the kitchen floor to choose from, she prefers to travel from one end to the other *via* the dresser; a feat fraught with fearful consequences when the plates stand nicely balanced, and jugs hang by a single hair. Cats, too, are given to late hours, and, scorning latch keys, will jump through a window sooner than stay out all night; they are notorious gluttons, and would risk a dozen smashes to get at the cream ewer. But in course of time the sagacious housewife will come to allot the blame as it deserves; though the lesson may take long to learn. She gains her experience slowly and sadly. To watch the progress she makes is no uninteresting study.

**Ménages** vary of course with the means of their possessors. In one, regardless of expense, the glass comes from Phillips, the china is all Minton's or Mortlock's; in another the service consists of bare necessities—the tumblers are of thick and turbid glass, the plates of willow pattern. But I will take as my example the household midway between these two extremes; the home of a couple in comfortable circumstances, who during their engagement "shopped" for themselves, bought their furniture with certain restrictions in price just as it pleased them, and started in life surrounded by a host of "nice things," half purchased, half due to those enthusiastic friends who deluged them with wedding presents. At their first dinner in their new home, they sit down to a well appointed table. The glass is of the last design, the centre piece and flower vases are charming, the dinner service a gem—just a plain dead white, with an exquisite border of one bright colour, and a neat monogram below it; in the rest of their snug house the eye is equally well pleased. The crockery in the best bed-room has been chosen in perfect harmony with the hangings; even the kitchen fittings have a certain æsthetic charm. How long will this last? The first crash comes when that costly saucer of majolica, which was handed down from her mother's ancestors, is ground to pieces under the iron heel of a flat-footed maid; by-and-by the boy in buttons plays football with the water carafe—a choice specimen of the modern antique, tall and slender and exquisitely shaped. Soon great chips appear in the dinner plates—the cook says the colour will not stand the fire; the soup tureen leaks, and a close inspection shows a gap like a yawning chasm underneath. Such accidents as these stand first upon the roll. They are of a nature not easily to be overlooked, and Madame may shed tears over their very fragments at the time of the catastrophe. It is otherwise with the rank and file of the china closet—the cups and saucers and the delicate glass. The slaughter here may be great before it is apparent, and the adroit servants, to hide their mishaps, will shift and change them about with desperate sleight of hand, making the same set do duty twice over, as we see a clever stage manager, with a limited company, manoeuvre his supers. By this time, too, there is probably a nursery to increase the chances of loss. In the royal domain, where "baby" reigns, there is a supreme indifference to breakable property, and infant paws at one fell sweep will destroy in half a second as much as half-a-dozen cats. And so the game proceeds. The mistress of the house passes through every stage of passion. At first she is loud with invective and reproach, then sullen and morose, rousing into life only at each fresh crash; by-and-by she settles down like Job in passive resignation, which should be infinitely reproachful to those who do her so much wrong. In the end the supreme hour arrives. It becomes evident all at once, in one year, or two or three at the most, that everything fragile has been destroyed, and that the house must be entirely replenished from top to bottom.

And now it is that the woman who is wise bows her head, with something of Hindoo fatalism, before the inevitable. She recognises for the first time that while glass and human nature remain as they are there will be breakages; and she seeks not to escape a natural law, as certain in its processes as the rising of dough or the burning of fire, but to suffer as little as is possible from its action. She bends before the cruel blast, and tries to screen herself from its severity. There are many anodynes to prescribe—anodynes and lenitives, not cures; for all that the most sanguine can expect is to reduce the evil to its lowest terms. Constant preaching, rising at length to the sublimity of "nagging," has probably been tried in the very earliest stages of smash. The results thus obtained have of course been unappreciable. Brave words; you might as well talk to the winds. Reproaches run off a servant's back like water from a duck's; their sensitiveness is impenetrable to such attacks, unless accompanied by what our friends the cheap tailors call the *argumentum ad crumenam*. The "pocket" argument

comes in here with especial force. Nothing else will foster carefulness. Make it a rule with your servants when you engage them that they pay for all they break. It is wonderful what delicacy of touch will then be developed in the most callous finger tips. When Maria knows she must give up her Dolly Varden because her mistress insists on the damaged sauce bowl being replaced, she will think less of a 22 and more of her footsteps in coming down stairs. So Thomas, the careless boy, who only dreams of top and marbles, will wake to the fact that he is wiping glass when he has to give his master a couple of new decanters. But, in order to carry out this principle in its integrity, repeated stock-takings at irregular seasons are indispensable. In no other way is it possible to fix accurately the saddle to the right horse. Without such frequent inspections we come at once to the vague and mysterious agency of the "cat," to which I have already referred. Last of all, it behoves all prudent housekeepers to adopt the least fragile forms of ware. In the matter of glass this is no doubt nowadays especially difficult. Fashion is all on the side of the shopkeepers. The wine glasses that are most in vogue seem made only to be broken; their thread-like stems and delicate thin chalices quite implore us to squeeze them tight. If you must have thin glasses, use them as little as possible. Relegate them to the closet, or at least keep them for your own dinner table, and at luncheon, when the children feed, bring out something more substantial. Again, the man who invented "stone china" should have a statue in his own enduring materials. Nothing short of *malice prepense* will break a stone china plate. I have seen the stewards of a great Company's ocean steamers throwing them about in a gale of wind as coolly as a landsman plays with quoits. They may chip and turn colour, but they will not break. They are the Old Guard; they may be hacked in pieces, but they will not surrender. All that is needed with stone china is an exterior more inviting. With stout glass, stone china, and a stern discipline, housewives may do much to alleviate the ills of breakage. But, as I have already said, they cannot escape the evil altogether unless indeed they return to primitive habits. After all, a bill at a glass shop is better than a plantain leaf for a plate, or a tin pannikin to receive your champagne.—*Queen*.

Opera Bouffe is evidently taking an important position in Hungary. The prospectus of a girls' school at Pesth announces:—"With regard to mythology, we shall teach the young ladies all that is necessary to understand the modern *opera-bouffes*."

Pearls are likely to become more priceless than ever. The pearl oysters of Madras and Tinnevelly are in a very bad condition, and the banks having been recently investigated, it was found that on forty-three there were no oysters at all, while on thirty others they were very mediocre. The failure is attributed to under-currents, the formation of mud or sand on the banks, the ravages of the skate and parrot-fish, and the disturbance of the water caused by the mooring of the fishing boats.

A novel substitute for the custom of giving wedding presents was recently adopted by a youthful couple in a western town. They were married in church, and a fee of twenty-five cents was collected from all persons entering to see the ceremony. The whole amount was given to the newly married pair as a capital to commence house-keeping. This plan has great advantages over the ordinary method of present-giving—nobody has to think what to give and the parties most concerned can buy what they want. The fee might be increased to fifty cents or a dollar.

NORTH HAVEN, KNOX COUNTY, ME.,  
12th June, 1871.

MR. JAMES I. FELLOWS, Chemist, St. John, N.B.:

Dear Sir,—Having used your chemical preparation of Hypophosphites, which was recommended to me by Mr. Blagdon, Apothecary of Rockland, I am truly surprised with its wonderful effects, because for several years my health has been declining, notwithstanding every means possible, which offered encouragement, was used by me. Several alarming symptoms appeared, amongst which dyspepsia, palpitation of the heart, impoverished blood, and great prostration. Since January, when I began the use of your Syrup, my health has steadily and amazingly improved, so that now it gives me great pleasure to recommend it to others, and in this way to show my gratitude for return of health. To all who require a remedy for debility, I would say they will find your Compound Syrup of Hypophosphites just what you say it is. I believe it is the best preparation in use.

I am, sir, &c.,

ELEASER CRABTREE, J. P.

**WE SAY THEY ARE GOOD.**—The Shoshonee Pills are manufactured with the utmost care, scrutiny, and exactness, from the very active principles, doubly refined and purified, of such of the choicest remedial agents of the vegetable kingdom as to possess them of properties that only meet in harmony the exigencies of every ingredient entering into the composition of the Shoshonee Remedy, and also that give the Pills themselves more desirable qualities for general use than any family pill before the public. On account of the extreme mildness and yet great certainty in action of the Pills, as well as their strengthening and healing effects on the stomach and bowels, and in fact the whole system; along with their permeating and restorative action on the liver, kidneys, skin, &c., &c., we say on account of their superior qualities the Pills are placed on sale as a Family Medicine.