

from a distance. A gentleman, who has visited here repeatedly, is of opinion that it is certainly increasing. The atmosphere in this new-born island is anything but odoriferous: brimstone and such-like are the prevailing savours, to a degree almost suffocating. Every hole dug in the sand is filled with boiling water."

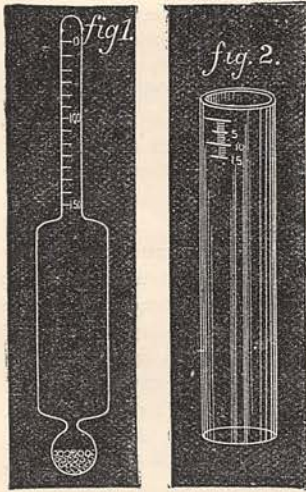
A very short period after this, the island subsided, and the following year, 1832, the *Rapid* was sent to survey the spot. We were at anchor for two or three days, and in the first night, when on watch, I was startled by a shout, "Call the captain, sir; here's the

wolcano a-rising close aboard us!" And there, sure enough, was a blazing red light in the direction. But a more experienced old quartermaster said, "Hold hard, sir; it is only the full moon. We will soon see under her, but to satisfy yourself come up the rigging, sir," which we did, and proved the correctness, more quickly, of the old sailor's assertion. He wound up by saying, "Depend upon it, Graham's Island has gone for ever." Now a shoal (the crater) lies a few feet beneath the water, marking the spot over which the Union Jack had flown on what was once Graham's Island.

## THE GATHERER.

### For All who Carry the Milking Pail.

When the golden age of universal honesty comes, what an easy life we shall lead! In the meantime we must be content to wage war against all kinds of fraud, armed with such weapons as weights and measures, chemical tests, and the lactometer and creamometer shown in the accompanying engravings.



The lactometer (Fig. 1), about which every one has heard something, is a very delicate hydrometer, so arranged that it floats in pure water at the zero point of the scale. The depth to which it sinks in milk, or any liquid with a specific gravity of 1.029 at 60 degrees Fahr., is marked 100. When employed in connection with milk, the lactometer shows its specific gravity only; it does not determine the quality.

There is a difficulty in settling the quality of milk, even when we know its density, and it arises in this way:—Milk contains two different kinds of ingredients, salt and sugar—each of which increases its specific gravity—and butter and cream, by which the specific gravity is lowered. Hence arises the apparent paradox, "that you may lower the specific gravity of milk by adding either water or cream, and increase its density by removing the cream." But although cream is lighter than milk, it is heavier than water; thus, so far as the specific gravity is concerned, the addition of cream has a much less effect than the addition of an equal amount of water, and the lactometer, though it does not detect skimmed milk, cannot fail to indicate the admixture of water in any considerable quantity. If the result of the lactometer test excites suspicion, the milk can easily be submitted to a complete analysis by competent hands.

The creamometer (Fig. 2) is a very simple instrument, which may be used in connection with the lactometer. Its object is to decide upon the richness of the milk. It is a straight tube, closed at the bottom and graduated in hundredths, although the figures need not extend farther than a little way from the top. To use it, pour in the milk, let it stand and throw up the cream, then read the volume. Pure milk yields about ten per cent. of cream, but is subject to great variations. The creamometer at once detects skim milk, but cannot decide on the quantity of water added, because unwatered milk may still be poor in cream, and watered milk throws up its cream more rapidly than pure. Both this instrument and the lactometer, however, should be in frequent use; they do not injure the seller, and to the buyer afford at least partial protection.

### Soothing One's Nerves.

Nervousness is one of the prices we have to pay for civilisation; the nervous savage is a being unheard of. For this disorder, which is partly of a mental, and partly of a bodily nature, relief is sought in various ways, and amongst these we may place the employment of narcotics. The temporary relief afforded by these drugs is very apt to lead those who suffer from nervous sensations to put too much trust in, and resort too frequently to them. In the long run they prove most destructive to health. Their use has of late become so frequent as to threaten society with a serious evil. It has been boldly contended that chloral is to be found in the workboxes and baskets of nearly every lady in the West End of the metropolis, "to calm her nerves." No doubt this is an exaggeration, but it is a fact that in New York chloral-punch had become an institution scarcely a year after the introduction of chloral into medical practice. And now it turns out that Germany—"sober, orderly, paternally-ruled Germany"—has such a thing as morphia disease spreading amongst its population. The symptoms are not unlike those of opium-eating. Experience suggests that persons suffering from this disease should at once be deprived of the drug. Their wilfulness and liability to relapse, however, are so great

that it is said that only about twenty-five per cent. have been seen to recover in a large series of cases.

#### "The Pearl of the North Sea."

The island of Heligoland has lately attracted notice from a report that the inhabitants were desirous of throwing off the easy yoke of England and casting in their lot with the Germans. It was a statement for which there was not the slightest foundation in fact, but it gives us an opportunity of setting down a few particulars regarding a British possession of which so little is known, that a contemporary wrote of it the other day as a preserve for countless rabbits; whereas there is not a rabbit on the island, nor ever has been.

Heligoland lies about thirty miles or so from the mouth of the Elbe. It cannot boast of any great size, being only about a mile long from north to south, one-third of a mile in width from east to west, and about two miles and three-quarters in circumference. Its situation, however, is important, for in time of war it would command the whole German trade in the North Sea. The island is divided into an upper and lower quarter. The former consists of the "Oberland," a rock 200 feet high, on which is situated a town of 350 houses. The lower quarter embraces Sandy Island, a patch of shore south-east of the cliff, and communicating with it by means of a flight of 173 steps. On Sandy Island there are about 60 houses.

The population of Heligoland at the census of 1871 was 1,912. The industries are commerce on a small scale and fishing. The fishing population—now rapidly decreasing—are of Frisian origin, and remain true to the notions of their ancestors, the sea-rovers of old, by loving the ocean and holding land-labour in utter contempt. The merchant class consists chiefly of immigrants from Hamburg and other places on the mainland, and their descendants.

Since 1830, Heligoland has been much frequented as a bathing-place, and many of the natives devote their attention to letting lodging-houses, on the proceeds of which they live during the winter. The island is a place of rendezvous for the English North Sea fishing smacks, seventy or eighty of which are at times anchored in the roads.

This "Pearl of the North Sea," as the Germans call it, was formerly a Danish possession; it was taken by the British in 1807. It is ruled by a governor, appointed by the Crown, but all internal affairs are managed by a council of the islanders.

The island has one great enemy, and that is the sea. The dashing of the waves against its cliffs has already greatly diminished its size, and unless something is done it must fall at last a prey to the ocean. The best remedy would be to shelve or slope the edges, but there is not enough available material in the island itself to do this. We might lend a helping hand; it would be easy for us to be generous to the extent of the earth of a few Highland hills.

#### Strange Fancies of the Little Russians.

The Little Russians inhabit an inland district in the south-west of Russia. They are a primitive people,

and of their funeral rites a striking account has recently been given by a member of the St. Petersburg Geographical Society. When any one dies in Little Russia, a jug of water is placed on the window-sill, that the soul may be able to perform its ablutions before setting out on its long journey. That it may have the sun to light it on its way, the funeral takes place at sunset. Within the coffin are placed various articles of food and clothing along with some money, that the deceased may have a prosperous start in his new life. The shavings of the wood of which the coffin has been made, and the tools used by the dead man, if he has been an artisan, are also enclosed in it. With these are put the parings of his finger-nails, which both men and women in Little Russia preserve all their lives, in consequence of a superstitious notion that they will enable them to climb the mountains that separate the earth from the mysterious region of the dead. Female mutes are invited to follow the coffin, and an old woman scatters handfuls of wheat over the mourners and along the road, a proceeding which is considered lucky for the living. The coffin is surrounded with cows—this being the continuance of an ancient custom prevalent among the Hindoos; it is thought to purify and disinfect the dwelling in which the death has taken place.

The Little Russians believe that the soul remains for some time in the house, in the shape of a butterfly; and cats and fowls are driven away for fear they should eat it up. After the funeral a banquet is held, at which a cover is laid for the deceased, who is supposed to preside during the festivities. The dead are held to be hurtful rather than well-disposed to their surviving friends. This, however, is not always the case; mothers sometimes, for example, revisit their children and lavish great tenderness upon them. But it is essential that the children keep the visits secret, or they will call down the vengeance of the mother on their native village. These are strange notions, and we linger over them with pleasure. They invest death with a sort of romance, and rob it of half its terror.

#### ANSWER TO THE SHAKESPEARIAN ACROSTIC ON p. 510.

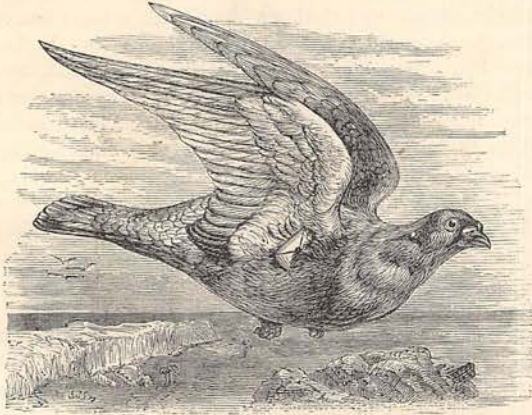
##### True Love.

1. Thurio (*Two Gentlemen of Verona*).
2. Romeo (*Romeo and Juliet*).
3. Ursula (*Much Ado about Nothing*).
4. Egeus (*A Midsummer Night's Dream*).
5. Launcelot Gobbo (*Merchant of Venice*).
6. Othello.
7. Vincentio (*Taming of the Shrew*).
8. Elbow (*Measure for Measure*).

##### On the Wings of a Dove.

The carrier pigeon—about which we would here speak—is a sort of natural telegraph, and likely to be very useful till we are able to fly through the air for ourselves. The latest application of the "homing" faculty, as it is called, of this bird is the establishment of communication between light-ships and the shore at times when it is impossible to convey intelligence

by any ordinary method. The maritime code of signals is taken advantage of, and two or three letters are stamped on the wing, intimating the nature of the assistance required. The bird is then let loose, and makes its way to its haunts on shore. Experiments are just now being tried at Harwich, where, had carrier pigeons been employed in this way only a few months



back, every soul on board the ill-fated *Deutschland* would, in all human probability, have been saved.

But to work thus in aid of shipwrecked mariners is but one of many employments for these useful birds. It has recently been shown that in a great many cases a pigeon service might be made to supersede the electric telegraph. This would but be reviving the practice of the great stockbrokers at the beginning of the century. During the war, relays of pigeons were kept all along the road from Paris to London, so that these speculative gentlemen obtained the earliest possible news of the course of events. The carrier pigeon came into special prominence during the late siege of Paris; letters, photographed on the minutest scale, were then carried to and fro by its means. The Prussians could not intercept the birds, and ended by adopting the system themselves. At the present time every fortress and fortified town in Germany is provided with flights of trained pigeons, by which communications could be sent into the town if invested by a hostile force. So much has the demand raised the price, that a good traveller cannot now be obtained on the Continent for less than £6 or £7.

#### Mysteriously Disappeared.

There is a remarkable social fact revealed in a return recently published in connection with the Metropolitan Police. During 1875 no fewer than 10,609 persons were reported to the police of the Metropolis as missing from their homes. Thus one person on an average mysteriously disappeared every hour of every day throughout the year. Of these vanished members of the community, 5,913 were found and restored by the authorities; as for the rest they either made their own way back, or were entirely lost to their friends. It is a pity we have not additional particulars regarding this surprising host of unaccountable absences from home. Probably a good

many disappearances were those of children; arrests for drunkenness would account for many more; some cases would be the result of domestic squalls, and often perhaps it would be the skeleton in the closet running away, to the secret joy of the whole household. But it would be interesting to have the statistics of this curious phenomenon of our domestic life more fully stated in future returns. Who were all those who thus mysteriously disappeared, and how many were lost and never found?

#### Burning Glycerine.

Glycerine—which is very cheap, and has the property of not becoming volatile at a high temperature—may, says an eminent French authority, be burnt in the ordinary lamps so long as the flame is kept on a level with the liquid, for its consistence prevents its ascending the wick. It burns with a white flame, and, when combined with substances rich in carbon, has sufficient illuminating power.

#### A Boon for Gutter Children.

Let us speak here of a good example; perhaps some, who have the power, will follow it. It is not so generally known as it should be that, for many years past, it has been the custom of the Bench of the Inner Temple to throw open their gardens to poor children every evening for three months from the 18th of June—the anniversary of Waterloo. This year the day was changed to the 1st of the month. “The gates are opened at six o’clock,” says a barrister of the Temple, “but for nearly an hour previously swarms of small children of the poorest type—pale, ragged, many of them without hats, shoes, or stockings—may be seen wending their way through the courts and passages of ‘these monkish haunts’ to the rendezvous. At the stroke of the hour—which is impatiently waited—the great gates are opened, and a scene of indescribable liveliness ensues. Pell-mell the ragged urchins rush to the grass, which is instantly covered as by a crowd of grasshoppers. Here they roll about, turn somersaults, stand on their heads, and by a variety of other extraordinary evolutions, accompanied the while with loud cries, testify to the pleasurable excitement. The whole affords an interesting—one could almost say touching—spectacle.” We have visited the gardens, and can speak to the truth of this report. One evening, in the early part of June, there were not fewer than 2,000 children present: it was the most considerable invasion the head gardener had ever seen of his domain.

About the Temple gardens cluster many interesting memories of the past—it was here, for example, according to Shakespeare, that the white and red roses were chosen as the badges of York and Lancaster—but the noblest chapter in their history, perhaps, is their being thus given as a playground for summer evenings to poor gutter children. The grass suffers somewhat in freshness, it is true; but, as the writer from whom we have just quoted remarks, what of that, if we bring colour to the wan cheeks of poor boys and girls?

Might not the spacious gardens in Lincoln’s Inn

Fields, it has been asked, be thrown open in the same way as the gardens of the Temple? They are near a close neighbourhood, where swarms of ragged urchins can find no healthier amusement than sitting in the gutter and making mud-pies. Just now, the best the little creatures can do is to flatten their noses against the railings of the gardens, and gaze with wistful looks into the paradise beyond. It is almost an untenanted paradise, and to throw it open under suitable regulations to the poor children of the locality would be a work of charity of a high order.

#### In a Druggist's Shop.

We hear less about the adulteration and short measure of drugs than about those of food, and, as a rule, we visit the druggist with more of simple faith than the provision merchant. But it is well to be on one's guard. Some startling revelations have recently been made in one of the largest towns of England, showing that in making up prescriptions druggists sometimes fail not only in supplying the ingredients pure, but in measuring them with the necessary care and accuracy.

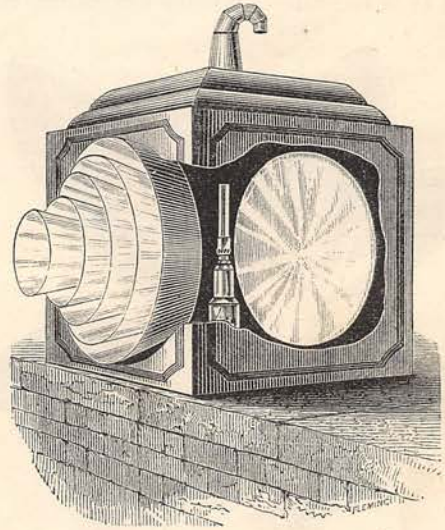
Several prescriptions were written out by qualified persons, and it was so arranged that each of these should include a full dose of some expensive remedy, capable of ready and accurate estimation in a mixture. They were presented to certain local druggists. The result was disappointing. A series of three samples, in which 120 grains of iodide of potassium were prescribed, were found on analysis to contain 122, 120, and 76 grains respectively. Of other three samples which should have contained 40 grains of sulphate of quinine, one contained only 9½ grains, or less than one-third of the required amount. Of twelve samples of glycerine, only five were pure and of the standard. Three samples of citric acid were found to contain a trace of lead.

From these facts we may learn how necessary it is, in the purchase of such an important article as medicine, to deal only with those of whose care and character we have by inquiry satisfied ourselves. The best may be the dearest, but in matters of health the last thing we should take into consideration is expense.

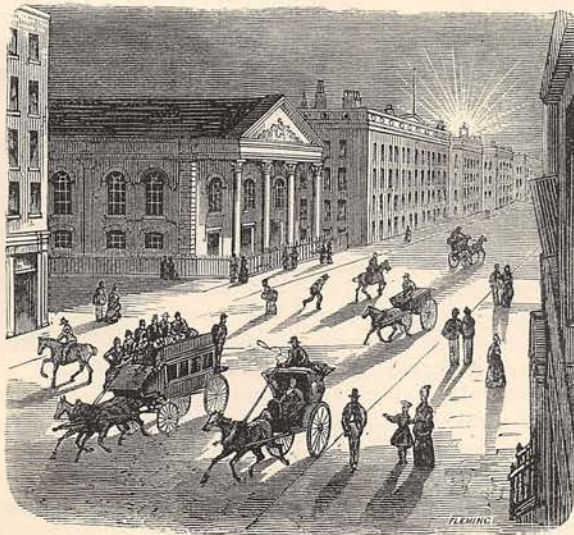
#### Night Lights on a Grand Scale.

The time is coming, according to some not over-sanguine people, when we shall no more think of lighting our towns with ordinary street-lamps than our houses with rush-lights and farthing candles. What the new system of illumination will be is, however,

doubtful. Huge artificial suns may put the moon to shame, or we may have some such method as that invented by Professor Balestrieri of Naples, and illustrated in the accompanying engraving. Professor Balestrieri has invented a means of illumination by reflection, under the name of the photo-thermic hollow sphere collector (*collecteur photo-thermique armillaire*).



To explain the principles upon which the apparatus is founded, would lead us too far into the scientific field. It is enough to say that the contrivance has been subjected to the severest tests, and found to be of great efficiency. For use in lighthouses it is said to be superior to any known invention.



As to its power in lighting cities, experiments have lately been tried in Rome. The light was placed on the Piazza Popolo so as to illuminate the Corso. An oil lamp, of considerably inferior power to that used in a lighthouse of the second order, was caused to throw a light by which a letter, in a small hand, could be read at a distance of about 2,000 feet. The inventor has also devised a smaller apparatus, which at a distance of 224 feet projects a beam of light eighty feet in diameter. The illuminating source is a

single butterfly gas-burner. There would be a notable saving in our gas accounts, if our streets were made cheerful at night by this means. The next thing will be to invent something to light up country districts, where on dark nights one has small choice between carrying a lantern and landing in the ditch.

## India-rubber Talk.

Killing the goose that lays the golden eggs has never been an uncommon practice. Our goose, in the present instance, is the india-rubber or caoutchouc-yielding tree. The demand for caoutchouc has grown so enormous, and the waste attending its collection is so reckless and excessive, that serious anxiety has begun to be entertained as to the continuance of the supply.



THE INDIA-RUBBER PLANT.

The trees from which caoutchouc is derived are of various genera, and are found growing wild in the forests of India, the Eastern Archipelago, Africa, Madagascar, Mexico, Nicaragua, as well as in South America. The richest and best field is the last-named. The *Siphonia* or *Hevea* grows in all parts of the basin of the Amazon, and yields the Brazilian caoutchouc. This is known as Pará rubber. It is the only kind that can be depended upon for regularity and strength.

The *Siphonia*, says Bates, "is not remarkable in appearance; in bark and foliage it is not unlike the European ash, but the trunk, like that of all forest-trees, shoots up to an immense height before throwing off branches." Caoutchouc is sometimes collected by cutting the trees down, but more frequently by making an incision in the bark of the lower part of the trunk. In a few hours the juice that flows out fills the basins, made of large leaves and plastic clay, which are adapted to receive it. An encampment of caoutchouc collectors is picturesque in the extreme. Their slim huts are built at the foot of majestic palms. In front the gleaming river flows peacefully on, and away through the dense undergrowth wind narrow paths to the lonely caoutchouc-trees.

The work of collecting this valuable product, not only in South America but elsewhere, is, as we have just said, conducted on extremely wasteful principles. Wholesale destruction of trees is going on, and in many districts they are rapidly disappearing. Now, we ought not to rely on a tree growing in a wild state; the

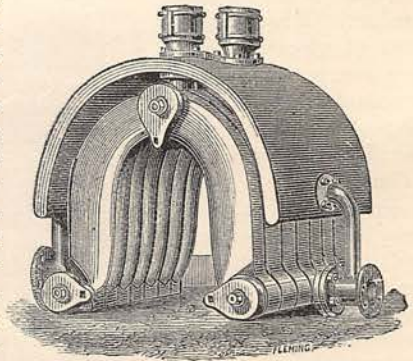
caoutchouc-tree should be cultivated. This has been strongly advocated in connection with British India. Cultivation, indeed, has already made some progress there, and it is now proposed to introduce the *Siphonia*, the tree of which we have just been speaking, into Assam, which, on account of climate, seems well adapted for its growth. It is a project which deserves success.

When caoutchouc was first introduced into Europe—not a very long while ago—it only aided in the manufacture of tubes for surgical use, and played the humble rôle of rubbing out pencil-marks. Since then what progress it has made! Wherever steam power is used, it is impossible to do without it; it supplies packing for the piston-rods, valves for the pumps, belting for driving the shafting, hose and tubing for conveying water. In telegraphy it is equally indispensable. We make of it waterproof clothing, fishing stockings, shoes, carriage aprons, diving dresses, door-mats, ground sheets for camping out, life-saving apparatus, medical and surgical appliances, garden hose, and a host of other articles. It has been turned to account also to make rings for rink skates, and furnish coins for South America, to take the place of paper currency. Certainly, it has grown to be one of the most important products of the wonderful chemistry of nature.

## Boilers on Good Principles.

Boilers often don't perform all they promise, whether set up in private dwellings, greenhouses, churches, or schools. Sometimes the fault belongs to the boiler, and sometimes it lies with the management. In the illustration we show an improved tubular boiler, which

possesses several features worth noticing. The shape is that of a saddle, which is generally allowed to be the most suitable for the purpose. The boiler itself is composed of a



number of tubular sections bolted together, with spaces between each, forming flues on each side the whole length of the boiler, and thus causing the entire surface to be efficiently heated. The usefulness of a boiler of course depends greatly on the amount of surface it presents to the flame, and the one before us, by employing a number of tubes, exposes the largest amount of surface in the smallest space. It is also so constructed as to absorb the heat from the fuel, so that as little as possible escapes up the chimney, and to allow a free circulation for the water throughout the entire extent. A decided advantage of such a boiler is that it can easily be enlarged by adding more tubes

and lengthening the bolts. To clean it and keep it in repair is also not difficult. It will hold fuel enough to last for twelve hours without attention, which will recommend it to those who have greenhouses at some little distance from their residences, and whose plants have to rely for their well-being on the tender mercies of servants, who naturally are averse to going out frequently on cold days and nights to tend the fire.

#### Tempting Fish with Locusts.

Since the plagues of Egypt, men have heard of locusts with an uneasy mind. They are, indeed, an enemy to be feared. We find them invading some countries in clouds that darken the sky, advancing with a noise like the rushing of chariots through the air. They settle down to ravage; every green thing falls a prey to their voracious appetites. "The land," says one of the old prophets with woeful truth, "is as the Garden of Eden before them, and behind them is a desolate wilderness."

To get some good out of things evil, men have caught locusts by the sackful, and eaten them roasted and fried in butter. They have also sometimes preserved them in brine, and pickled locusts appear on the market-stalls of Arabia and Syria. But a new use has been found for them by a French physician: it consists in preparing them in various ways as a bait

for fish. One method is to dry them in the sun and then work them up into a paste, of which small balls are afterwards made. These balls are thrown into the sea during fishing operations. Another method is to boil the locusts before making a paste of them. This bait, which is of an oily nature, is said to be greedily devoured by the sardine or pilchard. It has been tried with great success by the pilchard fishers on the coasts of Brittany. The French Government have taken much interest in the experiment, and furnished a hundred barrels of locusts from Algeria at the cost of the state, for the purpose of tempting the small fry of the sea. In the pilchard fisheries of Cornwall bait is not generally used, different modes of fishing being adopted to those employed in France. But it is thought probable for several reasons that bait may come into fashion; if that is the case, we shall have to trouble our foreign correspondents for regular consignments of this novel article.

#### How to see Sound.

A curious little instrument has lately been invented called the opeidoscope, which may be said to write

down, with a pencil of light, any sound produced within it. It is composed of a two-inch tube, on one end of which a piece of thin rubber, or tissue-paper, is pasted. In the centre of the rubber, or tissue-paper, is fastened a small piece of looking-glass—it should be about an eighth of an inch square.

When the opeidoscope is made, hold the end with the mirror in the sunlight, and the other in the mouth, so as to sing or speak in it. The ray of light reflected from the mirror falling on a white surface, will describe curves and patterns differing for every pitch and intensity. The same tones will give always the same results.

#### Condensed Liquids.

Those who go picnicing, and are in terror lest at the last minute they should discover that they have forgotten the corkscrew, will not need to torment themselves much longer. We are advancing in the direction of condensed liquor, and will soon be independent of corkscrews. Solid or condensed beer constitutes the

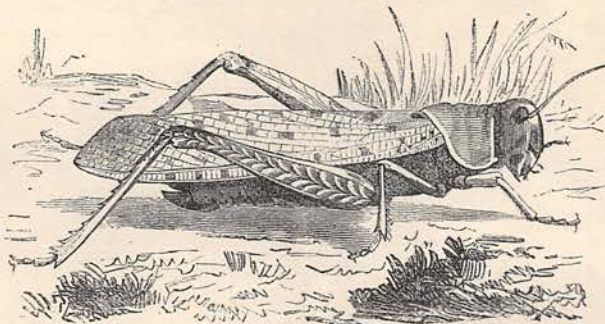
first step in this new march of civilisation. The credit of this invention belongs to Mr. Lockwood, whose method is soon described.

Beer is taken when in its best condition. The alcohol is separated from it by means of gentle distillation *in vacuo*, and the residue is then condensed in a vacuum-pan, like milk.

This process being completed, the solid beer is enclosed in hermetically-sealed packages, the alcohol being first added to it again, and acting as a preservative. The fermentation originally present in the beer is suspended by the heating, and the condensed beer remains sound for apparently any length of time. There is some now in existence which has been kept for about two years.

When re-made with water, the preparation is not wort, but real beer. It has all the requisite flavour and alcoholic strength, and only wants effervescence, which can quickly be imparted by reviving the suspended fermentation for a short time, in order to develop enough carbonic acid gas to give the required briskness; or it is fit for drinking immediately, if charged with carbonic acid gas like aerated water.

With a tin of Australian mutton in one pocket, a tin of solid liquid in the other, and a loaf under each arm, we shall go through the world gaily now. But will no one give us condensed bread; say a whole loaf stuffed into a pill-box?



THE LOCUST.

