

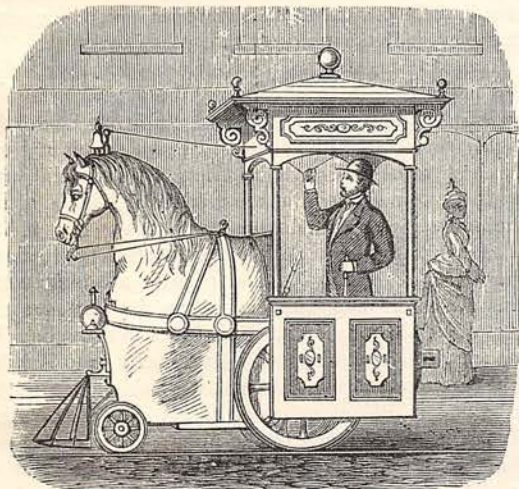
by the managers of the Blind School in St. George's Fields, Southwark. A long building has been set apart for the use of blind "small manufacturers," in which they may carry on their trades without house-

rent, and without private influence being necessary to obtain admission; their infirmity, and a good character for integrity and sobriety, being all the recommendation required. WM. GILBERT.

## THE GATHERER.

### The Modern Enchanted Horse.

We recently described a tramway-car propelled by means of compressed air, and one of the peculiar features of which was that, when looked at from the



street, nothing could be seen of the machinery. It looked just like an unhorsed tramway-car bewitched. An American inventor is convinced that one of the great difficulties in the way of driving street-cars by machinery is that they frighten the horses. He has therefore constructed an apparatus resembling a horse in form—it is shown in our engraving. It is the old idea of the Enchanted Horse of the "Arabian Nights," adapted to the nineteenth century; instead of flying through the air by turning a peg in the hollow of the animal's neck, the beast—but after all it is only half a beast—runs on rails, and drags after it a passenger car.

The motive-power is steam, generated in a tubular boiler of from four to five-horse power, located inside the imitation horse. This drives a patent rotary engine, which is geared to the driving shaft of the machine. Gas is used as fuel, so as to do away with smoke. The steam is condensed in cold water carried in a tank on the top of the vehicle. The gas used as fuel is compressed in suitable tanks to a pressure of 80 to 100 lbs. per square inch. The engine is provided with a break capable of stopping the apparatus within a space of twenty feet, while under a speed of eight miles per hour. It is said that the machine will run at from four to twenty miles an hour.

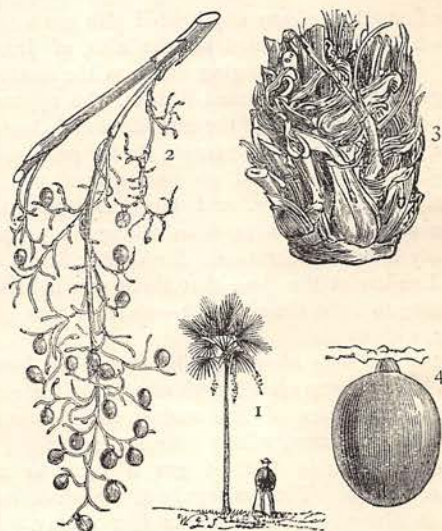
There is a signal-bell fixed above the horse's head, and a lantern is placed in front as a head-light, to give warning of its approach when the machine is running on dark nights.

We hope the inventor, in contriving this artificial animal, does not presume too much on the stupidity or near-sightedness of the genuine horse tribe. We must not forget that a horse is not an ass.

### An Extraordinary Tree.

Folk-lore tells us of trees that speak and trees that sing; of trees of stone and trees with gold and silver leaves; and of not a few that are nothing but brave knights and gentle maidens laid under spells. But reality often beats romance, and in no fireside story we can think of is there a tree of such varied uses and interesting character as one of which an account has lately reached us from Brazil. It is the Carnouba (*Copernicia cerifera*), a palm-tree which, unaided by the cultivating hand of man, grows in Ceara, Rio Grande do Norte, Bahia, and other parts.

The catalogue of its uses is almost endless. Its roots possess medicinal properties, and form a good substitute for sarsaparilla. The trunk yields a strong fibre, as well as timber and excellent palisades for enclosures. From it also is extracted a sort of flour not unlike Maizena, and a liquid resembling the Bahia cocoa-nut. The palmetto top when young is a palat-



1. General aspect and proportion of the Carnouba Palm.
2. Pendant branch of fruit enlarged.
3. Upper portion of stem enlarged to the same scale.
4. Individual fruit natural size.

able and wholesome food, and one may extract from it wine, vinegar, sugar, and a species of gum in its taste and properties very like sago. The wood of the tree is good for making musical instruments, and tubes and

pumps for water. The pith of the stalk and the leaves may be used instead of cork; the pulp of the fruit is pleasant to the taste; and the nut, after being roasted and ground to powder, does duty for coffee. From the dried straw, mats, hats, baskets, and brooms are made, and of this straw large quantities are exported to Europe. Then from the leaves wax is obtained for the manufacture of candles, and of this also the exportation is considerable.

So, then, with a few specimens of the Carnouba about one's dwelling, one could have, for the least trouble in the world, mats for the floor; baskets for provisions; straw hats for the sunshine; corks for bottles; a water-pump, complete; candles for dark nights; fruit, wine, vinegar, and sugar for the table; flour for bread; medicine for sickness; musical instruments for mirth; and countless things besides.

In point of usefulness the Carnouba towers above all the trees of the forest. It is of an accommodating disposition, and evidently cares nothing for the most severe drought. But perhaps it would be expecting too much to hope that it would stretch a point, treat cold with as much indifference as drought, and come and take up its abode with us.

#### Answer to Double Acrostic on page 256.

N apple S\*  
E mm A†  
L uperc I‡  
S ai L  
O dont O  
NovembeR

#### Throwing Light on London.

The first street of any city lighted with gas was Pall Mall—it was so illumined on the 28th of January, 1807. The merit of bringing gas into the metropolis belongs to a German named Winsor, who appears to have been a compound of the enthusiast and charlatan. In the pamphlets which he issued for the promotion of gas-lighting schemes and companies there was such extravagance, quackery, and fanaticism that many people were at first kept from taking his proposals seriously into consideration. Sir Walter Scott wrote from London at the time that there was a *madman* proposing to light the city with—what do you think?—why, with smoke.

Times are now altered. The streets of London, which have an aggregate length of 2,500 miles, require about 5,000 miles of gas mains, and upwards of 54,000 public lamps, which consume something like 1,000,000,000 cubic feet of gas a year, or about 3,000,000 a day. The gas supply of the whole metropolis is about 38,500,000 cubic feet a day. This necessitates the coking every year of 1,500,000 tons of Newcastle coal, the value of which is said to be considerably above £2,000,000 pounds sterling. The value of the residual products, such as coke, tar, and ammonia liquor, is over £800,000.

#### The Cool Cucumber.

The onion is the Spaniard's vegetable; the potato the Irishman's; the leek the Welshman's; but the Russian raises his voice in praise of the cool cucumber. Of every meal of every Russian peasant the cucumber forms an indispensable part. A moujick's dinner, to take one repast as a specimen, may be said, according to a modern traveller, to consist of  $x +$  cucumber. The  $x$  may consist of his favourite cabbage soup, with or without meat in it, and sometimes in addition there may be the famous grit porridge. Sometimes the soup may be without the porridge, sometimes the porridge without the soup, but in either case the cucumber is sure to be there; and should  $x$  equal zero, then the ever-faithful cucumber does duty for everything else. It is simple diet, if not very strengthening.

There is something odd about the cucumber being the national dish in a country like Russia. In hot and arid regions, such a juicy vegetable might well be highly appreciated; and accordingly we find it in great demand in the burning districts of southern and south-western Asia. But the climate of Russia is not such as to give a stimulus to cucumber-eating. It has been suggested that the favour entertained towards the vegetable by the Russian peasant arises from its cheapness—he can buy cucumbers for the fifteenth part of a halfpenny each. This is cheap enough. He who would live on sixpence a day should go to Russia, and take to eating the national vegetable. He might even find it difficult to spend all his allowance. And Russia would certainly be the country for carrying out that famous project for extracting sunbeams out of cucumbers, "which were to be put in phials hermetically sealed, and let out to warm the air in raw, inclement summers."

#### International Money-Bags.

Almost every nation has its own coinage, just as it possesses its own peculiar physiognomy. The adoption of a universal currency has been urged by philosophers, but hitherto their arguments have made but a slight impression. Some day, however, we may have such a coinage in its widest sense, and in the meantime it is our duty to lend a helping hand to any scheme aimed in this direction. There has recently been presented to the United States' Senate a resolution proposing a common unit of money for the States and Great Britain. The idea of the mover of this resolution is to make the gold dollar the common unit, slightly reducing the present value of the dollar, so that five dollars shall equal the British pound.

The great difficulties in the way are those of sentiment and ignorance. We have an affection for what we have been long accustomed to, even though it be only a threepenny-bit; and it might be hard to convince some people that they were not positively injured in pocket by a change in the coinage. When the calendar was reformed in the middle of last century, the unlearned masses were firmly convinced that they had been robbed of eleven days of their destined lives by the transaction. With a new coinage they might think they had been defrauded of something more substantial than time.

\* Nelson saw the dead body of Caracciolo floating.

† Lady Hamilton.

‡ Priests of Pan who assisted at the Lupercalia.

### Life on Street Pavements.

The naturalist need never be at a loss for objects of study. In the country, to be sure, is his best field: there he can run after butterflies, smear trees with sugar to catch moths, snare unsuspecting birds, stick pins through beetles, break stones, and gather plants from morning till midnight. But even in the city he will meet with many things strange and interesting. Let him take a microscope and examine the street pavement. He will not, perhaps, hunt long before discovering as curious an animal as one could wish to see. The creature is not unlike a cream-coloured ball, and is known by the name of *gromia*. It is diminutive enough, being only about one-sixteenth of a line in diameter. Should our investigator take it up and place it in water, it will be seen in a few minutes to project in all directions a most wonderful and intricate net. Along the threads of this net (which are less than the thirty-thousandth part of an inch in diameter) minute *naviculæ* will be observed floating like boats in the current of a stream. When these *naviculæ* reach the central mass, they are swallowed.

Wet weather is the harvest time of the *gromia*. When the days are dry and sunshiny, it lies ruminating in the dust, but when rain falls it spreads its net and gathers food. Its habits have not been fully investigated, and, though such a little creature, perhaps some naturalist will think it worth while to take it under his special care, and devote to it the best labours of a lifetime.

### A Far-away Philosopher.

The great empire of China is not only at the other end of the world in point of space, but as regards sympathy with Western ideas. It has its students and philosophers, but they do not fish in the stream of wisdom after the manner of our learned men. They have tackle and baits of their own. It is on this account, if on no other, that we hear with interest of a Chinese philosopher who has adopted quite a revolutionary attitude as regards his fellow-countrymen, and has established a scientific laboratory of his own at Shanghai. With extraordinary energy this wise celestial, after purchasing the apparatus merely, has become master of photography. He has also studied medicine under a European doctor, and invented a new and, it is said, very efficacious antidote to opium-eating. In his laboratory there is a fair show of ingenious philosophical instruments, most of which are of his own device and construction. He is also possessed of a printing-press, and the great object of his present labours is to discover how to print Chinese books in movable type. He has already begun the manufacture of the matrices or moulds for the purpose. This is a truly gigantic undertaking, no fewer than 6,664 matrices being required for each single sort or variety of character, whilst there are in all above 20,000 characters in the Chinese language. The laborious philosopher does not expect to live long enough to complete his task, and, we are told, is educating his children to the proper degree of skill in order that they may continue the undertaking. Here

we have the right view of life: we are but stones in the great temple of human progress, and those who come after us should be so instructed as to advance the glorious fabric by carrying on our unfinished labours.

### To All who Darn Stockings.

Showers of good wishes are sure to fall to the lot of any one who can show how to darn stockings so easily and expeditiously that the repairing of a whole basketful, even in an extreme state of dilapidation, will be one of the lightest of domestic duties. We envy, then, the happy fortune of an inventor of Boston, Massachusetts, who has just contrived a darning-machine by means of which the hugest darns are executed with a rapidity almost magical, and with a neatness to which you, fair reader, have never attained, with all your years of practice.

The following is a description of the invention—a fit companion, apparently, to that household wonder of the age, the sewing-machine. Two small plates—one stationary and the other movable—are placed one above the other. The faces of these plates are corrugated, and between them the portion of the stocking requiring to be mended is laid. Twelve long eye-pointed needles are arranged side by side in a frame, which last is carried forward, so that the needles penetrate opposite edges of the stocking-hole, passing in the corrugations between the plates. Hinged just in front of the plate is an upright bar, and on this is a cross-piece carrying twelve knobs. The yarn is secured to an end knob, and then, with a bit of flat wire, pushed through the eyes of the needles. Next, the loop between each needle is caught by the hand, and hooked over the opposite knob, so that each needle carries really two threads. The needles are now carried back to their first position, and in this way they draw the threads, which slip off the knob through the edges of the fabric. A little push forward again brings the sharp rear edges of the needle-eye against the threads, cutting all at once. This is repeated until the darn is finished; and beautifully finished it really is.

### Hidden Wealth in Rubbish-Heaps.

Most people would like to be racing along the high-road to fortune, and no doubt that is one reason why so many inventors have turned their attention to the heaps of refuse accumulated at the heads of our coal-pits, and endeavoured to make something out of them in the shape of good artificial fuel. What fortunes would be realised if those mountain-ranges of rubbish could only be made marketable!

The first plan hit upon in this direction was to bind the powdered coal together by means of clay. It proved a complete failure. Tar was next tried, and it was found a great improvement on the clay. Then the method was adopted of mixing the coal-slack in a mucilage made of starch and water. Last of all an inventor has arisen who unites the two last-named plans, and concludes his manufacture of artificial fuel by means of pressure and heat. This, it is hoped, will prove the long-sought-for perfect process.

The mixture employed for binding the small coal together is composed of pitch, tar, starch, and sulphate of lime. To every ton of coal are allowed ninety pounds of pitch, three gallons of tar, five pounds of starch, and five pounds of sulphate of lime. When the pitch and tar are in a boiling state, the starch is added, and after the starch the sulphate of lime, the object of the last being to destroy the offensive odour of the tar. After the coal has been thoroughly incorporated with this binding mixture, the mass is subjected to a pressure of a ton and a half to the square inch, and bricks of fuel are the result, these being ready for use as soon as they are cool.

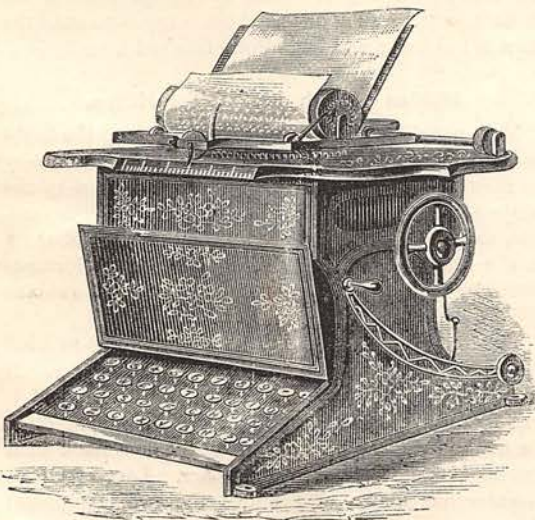
In such a project as the above all are deeply interested. Its success may end in our having cheaper fuel, and don't we all want that badly?

#### How Anglo-Indians are Yellow.

It used to be thought, when Anglo-Indians came home looking as yellow as their gold, that their sallow complexions were the result of diseased liver, or a peculiar effect produced by the Indian climate. An Indian physician has just discovered that this was a mistake. The jaundiced look which those old Bengal tigers used to have, he ascribes to the constant eating of curries. In curry-powder one of the principal ingredients is turmeric. Now the yellow dye of turmeric, says our authority, is a very powerful one, and it seems probable that it will tinge all the tissues of a yellow colour if eaten daily for a number of years. Curry is not now so much used by our countrymen in India as in the olden time, and it has been observed that those who come home, at least from Upper India, are not quite so yellow-looking as their predecessors.

#### Writing by Machinery.

An ingenious substitute for the pen is coming into use. This is an American invention, by means of which persons are enabled to write, or rather print,



whatever they have to say without using a pen. In size and appearance the writing-machine is not unlike

an ordinary sewing-machine. In front, as will be seen from our engraving, there is a key-board bearing the letters of the alphabet, numerals, and marks of punctuation. On touching one of the keys, a small lever,



bearing the corresponding letter or figure, rises and strikes against a ribbon saturated with prepared ink. Over this ribbon the paper is held on a roller. Every letter strikes in the same spot, but the roller bearing the paper moves forward a space after each letter, thus the letters appear on the paper in their right places. The mechanism is very simple. The levers bearing the letters act in much the same way as those of a piano—they are all strung on a circular wire, so that every letter strikes in the centre of the circle. Whenever a line is finished, the action of a treadle sends the roller with the paper back to its original position, and, by a clever contrivance, a fresh line is brought under the operation of the apparatus. The type used is all small capitals.

The pen of the readiest writer cannot equal the type writing-machine for speed. The rate of the former is from fifteen to thirty words a minute; the speed of the latter is from thirty to sixty words a minute.

#### Nursing the Sick.

The sober judgment of Florence Nightingale on the line of life with which she is identified will be perused with interest. "I give a quarter of a century's experience," she says, "when I say that the happiest people, the most thankful for their lives, are, in my opinion, those engaged in sick-nursing. In my opinion, it is a mere abuse of words to represent the life, as is done by some, as a sacrifice and a martyrdom. But there have been martyrs in it. The founders and pioneers of almost everything that is best must be martyrs. But these are the last to think themselves so. And for all there must be constant self-sacrifice for the good of all. But the distinction is this: the life is not a sacrifice—it is the engaging in an occupation the happiest of any."