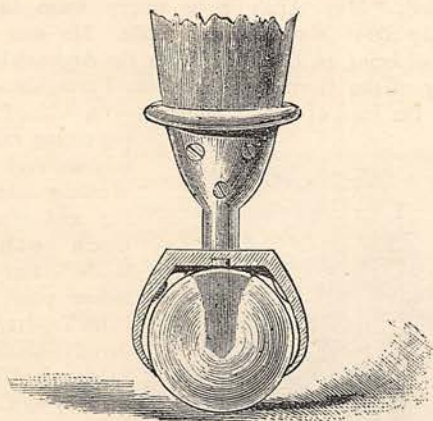


## THE GATHERER.

### Spherical Castors.

Our readers have doubtless often witnessed the eccentricities of the ordinary castors by which couches, large tables, &c., are moved about from place to place. They cannot have failed to remark the peculiar line of motion which these appliances take. If it be desired to push the table straight ahead, in nine cases out of ten, the castor zigzags off at a tangent to the right or left, and a distinct effort is necessary to make the piece of furniture keep the proper path. A new form of castor has been invented, which apparently will remedy the nuisance alluded to, and enable any article to which it is applied to be moved with great ease. It consists of a glass ball held in claws cast upon a shank, which can either be slipped upon the leg of the piano



A SPHERICAL CASTOR.

or other object, or can be fastened in the usual manner by screws. As the ball touches the inner sides of the claws only at points, metal projections are provided at these places of contact, and directly under the shank a piece of bone is inserted to reduce the friction between the ball and its holder. The chief merit of this castor lies in its strength and its marked ease of motion. The ball being perfectly smooth, it leaves no trace on the softest carpet, nor can it become jammed so as not to roll. When attached to pianos, the glass ball castor is stated to possess the singular feature of improving the tone; but, however that may be, most people would be quite content with the increased facilities which it affords for readily changing the position of the instrument.

### Edison's Electric Light.

On the fourth of October last, Mr. Edison, the famous inventor of the phonograph, telegraphed from America to Paris and London that he had solved the problem of general illumination by means of electricity.

It is said that about a year ago he discovered a sub-

stance which became luminous when an electric current was passed through it, but did not waste away like carbon, kaolin, and plaster of Paris. This substance forms the *wick* of his electric light, and by a method of distributing the current, not yet published, he can supply a thousand or more lights, if need be, from one current-generator, or dynamo-electric machine. The kind of machine employed appears to be immaterial so long as it is economical. Those who have seen the light describe it as being softer and whiter than gas, showing colours in their pure tints, and steady to the eye. It is turned off or on by a spring, and can be regulated in brightness at will. No matches are required, and there being no flame, all danger from fire is avoided. The form of light to be adopted is the fifteen-candle power, equivalent to that of the bat's-wing gas-burner, and all the lights will be of the same degree of brilliancy. The electric wicks will be fitted to the existing brackets and chandeliers; the electricity feeding them being conveyed from the generator in insulated wires, laid in iron pipes underground. Meters for gauging the current employed by the light consumers will have to be devised, as consumers will be charged for electricity in the same way as they are now charged for gas; and other details will have to be worked out. But when all is completed, the general introduction of the system will proceed, and central stations will be established in New York, each station supplying electricity to a district comprised within a half-mile radius.

### Gas from Water.

Before the working details of various systems of electric lighting can be perfected, some considerable time must necessarily elapse. But under any circumstances it is impossible that our old and tried servant, gas, will be entirely superseded by its great rival. While public attention is centred upon the subject of lighting, it may not be uninteresting to give an account of a new source for the supply of gas.

Certain of the New York theatres and hotels have for some time past been supplied with gas obtained from water, which is said to have an illuminating power 30 per cent. greater than coal-gas. It costs the company who are lucky enough to possess the secret 50 cents per 1,000 feet, and they sell it for \$2, reaping "at one fell swoop" a profit of something uncommonly like 300 per cent. Should the speculation be destined to pass from the experimental to the permanent stage, the Water-gas shares will become the New River shares of New York. The first operation in the manufacture of this gas is to heat the water, and next to superheat it to about 1,000° Fahr. The water is then passed into generators filled with anthracite coal, by means of which it is decomposed into its original elements. The oxygen here unites with the carbon from the coal, and the product is carbonic



oxide and hydrogen. At this stage a crude burning gas is yielded, containing sulphur and carbonic acid. To remove these the gas is passed through purifying boxes, which are immense sieves containing layers of lime. The sulphur is deposited in the lime, and a carbonate is made by the acid. These impurities removed, the gas next passes into carburettes—iron cylinders encased in water-jackets, on the “glue-pot principle.” These cylinders are half full of naphtha. The naphtha is vapourised by the heat, and the gas takes up this vapour and carries it into the retorts. In the retorts the naphtha vapour is decomposed and combined with the water-gas, and the latter is then burning gas, but not ready for the market. It is next passed through condensers and washers to remove any condensible vapours. The result is a clear, white-burning gas, free from odour or smoke, and far more brilliant than coal-gas. It is treated with naphtha vapours merely to give it illuminating power, and the company can make it at the rate of about 500,000 feet daily.

#### Double Acrostic.

At funerals and weddings  
We oftentimes are seen;  
In huts and hamlets of the poor  
And palaces we've been.

A goddess 'mongst the Thracians known was she,  
Who ruled the earth and heaven and quelled the foaming sea.

I'm the rage of our London,  
Yet never last long;  
My pleasures are chanted  
In untiring song.

Great hero of the warring gods,  
Upon thy plain of yore  
The Roman youths displayed their strength,  
And thence the laurels bore.

Sung by the million, it's proper for me  
By only one person delivered to be.

When I'm setting in the sky  
The tempests rage and roar,  
The lightnings spread them o'er the earth,  
And rains incessant pour.

In French the word implies “us” all,  
Yet means in English, skill,  
Or rather sharpness, which without  
One needs must manage ill.

My letters a poet will shortly disclose,  
And a poem of his which ev'ry one knows.

#### Explosive Dust.

The Common Club Moss, almost as well known by its scientific name of *Lycopodium clavatum*, possesses several curious properties that are worth at least a passing notice. Its seeds are so extremely minute as to resemble the finest dust, and they have in fact been used as a kind of powder to prevent the skin from chafing and for other purposes. Water they strongly repel, so much so that the hand may be plunged below the surface of water which has been sprinkled with them without being wetted. The moss-dust is also highly inflammable, but in this respect it has an essentially peculiar feature. If a portion be placed on

a plate and a lighted match applied, it appears to be incombustible. But let a small quantity be blown over, say, the flame of a candle, and it will immediately flare up like gunpowder. On this account the dust is popularly called “vegetable brimstone,” and it has actually been used in theatrical spectacles for the production of stage lightning. However, in this connection it suggests a much more serious inquiry. Carbonaceous dust, when mingled in certain proportions with common air, is known to be an explosive of a dangerous character, the powder of the club moss being an instance in point. In flour mills and other manufactories this dust is liable to accumulate, and unless trustworthy means are taken for its removal, it is not unlikely that an explosion might occur. Indeed a terrible disaster of this nature took place not long ago in the United States, and there is reason to believe that the calamity was due to the presence of mill-dust. Both history and experiment, therefore, clearly indicate a source of danger which it would be well for millers and manufacturers to fully investigate before some possible catastrophe overtake them.

#### A Caution respecting Perambulators.

American cloth is a material commonly used for the covers and capes of perambulators, &c. In Germany it appears to be customary to colour it with various tints, grey being a special favourite. During the past summer it was noticed that many children in the Rhine districts, Berlin, and elsewhere, who were in the habit of using wicker-work perambulators covered with the American leather, exhibited the ordinary symptoms of lead-poisoning. The occurrence was of so unusual a nature as to attract the attention of some scientific bodies, and the Society of Hygiene submitted several specimens of the cloth to a chemical examination. The presence of lead was speedily detected, and the analysis showed the amazing percentage of 42·7 of metallic lead. On burning a piece of the leather drops of lead were seen to flow from it, while on another piece exposed to the direct heat of the sun the varnish blistered and peeled off. Some of the perambulators were also used as cradles, and the risk consequent upon their being so employed was very considerably increased. As the cases occurred only in the month of July, it was reasonably enough inferred that it required the strong heat of a midsummer sun to excite the poison into activity. We do not know that any of the perambulators have been imported into this country; but as these carriages are essentially a household necessity, the matter is sufficiently serious to justify our calling the attention of parents to it.

#### A Sheep Protector.

There was a time, not very long ago, when dogs with a propensity for worrying sheep were the scourge of several of the pastoral districts of the country. It was no uncommon occurrence for a shepherd to find half of his flock done to death in this way, but fortunately these canine depredations have of recent years become rare. In the United States, however, farmers do not seem to have taken effectual steps for



putting down the evil, for we understand that the annual loss of sheep destroyed by dogs is estimated at more than £200,000. Captain Gilbert has invented a patent collar which, he contends, will be found ample security against attack. Acting upon the assumption that the dogs invariably seize their prey by the throat, with the

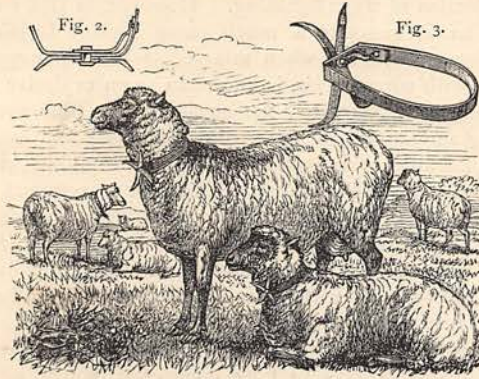


Fig. 1.

object of severing the arteries and drinking the blood, the collar is so designed as to protect this part of the body from any chance of assault. The device consists of an oval ring made of hoop-iron, with overlapping ends, which are straight and parallel with each other. In one of these ends there is a rivet, the head of which projects through a slot in the other end. One end of the slot is enlarged to admit of fastening and unfastening the collar. The part of the collar that comes under the throat is straight, and to it are secured by a single rivet two short bars, which are crossed and sharpened at their points. This same rivet is used as a pivot for the spring button which is employed to prevent the collar from being accidentally unfastened. The oil from the wool will, it is said, protect the collar from corrosion, while by means of a suitable crook the sheep may easily be caught without damaging the coat of the "silly" animal, as the earlier English poets used to call it. Fig. 1 shows the sheep with a collar on, and Figs. 2 and 3 are sectional and perspective views of the protector.

#### The Sea-Mole.

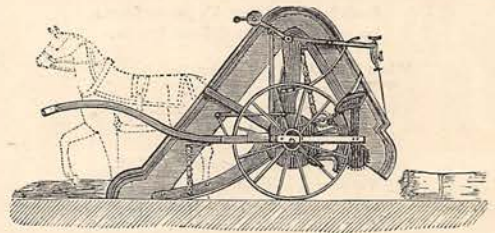
An ingenious form of diving-bell, called the "sea-mole," was for some time on view in the Italian section of the Paris Exhibition, and attracted considerable attention. It is the invention of Signor Toselli, and consists of an hermetically closed iron cabinet or bell, containing a reservoir of atmospheric air. This cabinet can be steered by the diver inside, who can descend or ascend in the water with it at pleasure. Lead weights to sink the diver, and air-pipes to convey to him air, are consequently dispensed with; but a rope in connection with the surface is necessary for hauling-in purposes. It is furnished also with the electric light, which the diver can set glowing at will, and a telephone communication with the surface can easily be added. There are glass windows in it for him to see by, and holes to put out grapnels for clutching

kegs, &c., at the sea-bottom, besides curious artificial hands to seize pearl oysters, sponges, shell-fish, or submarine cables, and shears to cut torpedo wires.

Signor Toselli is also the inventor of the bi-automatic grapnel, which by means of water pressure is made to either open out or shut its fingers or flukes round the body it is intended to lay hold of. At Ajaccio, in Corsica, recently, a bale of goods weighing 50 kilogrammes (about 1 cwt.), and at the port of Nantes a quantity of coal, were raised in a few minutes by it. A closed electric lamp, with a reflector to direct the beams downwards on the flukes, is also fitted over this grapnel to illuminate the bottom in shallow waters.

#### Binding Grain by Machinery.

Reaping machines were supposed, soon after their introduction, to have fairly cut away the "shearer's footing in the field," and subsequent experience has proved that this dictum was generally correct. Whether a like judgment will be pronounced upon an apparatus for binding sheaves, which is still fresh from the inventor's hands, we cannot undertake to say, but opinion hitherto has in the main been decidedly against mechanical labour of this kind. Mr. E. H. Knight, whose admirable "Dictionary of Mechanics" we have had occasion more than once to refer to in these pages, has published a description of the sheaf-binding machine, from which we learn that it is drawn by one horse alongside the swath, the grain being forced up an inclined platform into a loop of wire. A swinging arm then conducts the wire round the grain until the two ends cross, when they are twisted and the wire is cut. The end is left in a pair of grippers, and the arm ascends, paying out enough wire for the next sheaf, and so on. The machine is intended to follow the reaping



machine; to bind large or small sheaves with a tightness superior to hand-work; to pick up the grain cleanly; and to bind at such a distance from the foot of the sheaf as may suit the length of straw. It is the opinion of Mr. Knight that the machine does not look very promising, but he considers that it may be suggestive of some method whereby the problem which it attempts to solve may be more efficiently worked out.

#### Mesostich.

1. A pronoun of the feminine kind.
2. The opposite of friend we find.
3. These swarthy children of the South—
4. Fear this beast of claws and mouth.

My whole a poet you will find,  
Full oft to comic verse inclined.