Correspondents are requested, when applying to the Editor for the names and addresses of the persons from whom further particulars respecting the articles in THE GATHERER may be obtained, to forward a stamped and addressed envelope for reply, and in the case of inventors submitting specimens for notice, to prepay the carriage. The Editor cannot in any case guarantee absolute certainty of information, nor can he pledge himself to notice every article or work submitted.

A Froth Jug.

The jug which we illustrate in section is devised to overcome the drawback of having to waste time in pouring liquids apt to froth. The jug has a projection on its lip behind the spout, which catches the froth and holds it back. Needless to say that such a jug in pouring also prevents the contents from spilling over when it is very full.

Four Domestic Novelties.

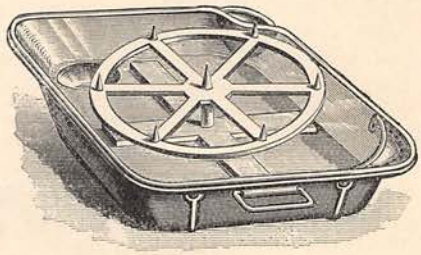
At a time of year when the question of fires becomes urgent, an improvement in coal-vases should meet with general approval. A new vase patented by Mr. Stroud has certainly a good deal to commend it, in that the lining is fitted with two small rollers at the back, which work on the bottom of the inside of the coal-vase, and so make the removal or replacing of the lining a very simple matter. No one who has not seen this improvement in operation would believe how great are its advantages.—Ladies will be glad to hear of a folding-box, which has lately been patented, for packing millinery, laces, flowers, or other articles. The box packs up flat, so that its thickness is not more than that of half-a-dozen sheets of cardboard, and opens out into a serviceable bonnet-box upon the pulling of strings provided for the purpose. These strings tied across the lid keep the box together, and make it a very useful article.—A sanitary sink strainer which has just been patented deserves the attention of housewives. It consists of a galvanised cage, which may be readily fixed over the grating of a waste pipe, and, retaining all refuse, allows dirty water to run away freely, and so avoids stopped drains.—Another patent which will appeal specially to mothers has just been brought to our notice. It is a simple arrangement for securely holding the bedclothes on sleeping children, who, as mothers know only too well, have a special aptitude for kicking themselves free when in bed. One end of the fastener is attached to the bars at the head of the bed, and at the other end is a spring clip in which the bedclothes are gathered. These fasteners have the merit of keeping a child quite covered, and that without putting the slightest restraint upon its movements.

Shortsightedness.

In the public schools of France 24.2 per cent. of the scholars are shortsighted, in those of Germany 35 per cent., and in those of the United Kingdom 20 per cent. The percentage of myopy is highest in the classes of rhetoric and philosophy. The hygienic condition of the school does not seem to affect it, but in the opinion of Dr. Martin, a French authority, want of physical exercise is the chief cause of it. By modifying the work of the classes, and allowing reasonable spells of exercise between them, the proportion of myopy in the College of Giessen fell from 26.6 to 17 per cent. in five years.

A Revolving Grid.

The simple device shown in the figure obviates the need of removing a roast from the oven, and also the



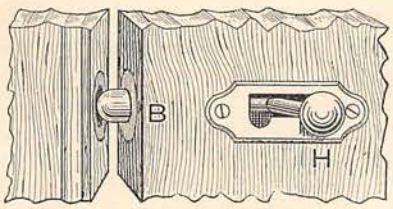
use of the fork in turning the meat. The grid is made in the form of a wheel of various sizes from 8 to 12 inches in diameter, suitable for pans of various dimensions. It rotates on a pivot, and the spikes on its upper surface hold the meat in position.

Microbe Photographs.

Professor Marshall Ward, F.R.S., has invented a new kind of photograph, which is based on his discovery that sun and electric light, especially the blue rays, destroy microbes. He covers a plate of glass with a gelatine culture of microbes, and exposes it to the landscape or person to be photographed. A picture of the object in light and shade gradually forms on the gelatine film, owing to the light developing the microbes more or less, according as it is dark or bright.

A New Bolt.

The "Paragon" bolt, B, which is shown in the figure, will be understood without much description. It is very simple, easily shot, by means of the handle H, and not liable to get out of order. There are no springs or screws about it, and it is very strong in action.



A NEW BOLT.

The Wind in Geology.

The part played by the air in geology is turning out to be more important than was generally believed. It is not only that it shifts the sands of the desert or the shore, and abrades the rocks with a kind of natural sandblast, and conveys the ashes of volcanoes to great distances. By the friction of the atmosphere it fuses meteoric stones, and scatters their dust far and wide. A peculiarity of this meteoric dust is that it contains numerous little hollow pellets and tubes as well as scales and angular fragments of vitreous matter. These pellets are discovered in ordinary air by the microscope, on the towers of cathedrals, and on the snows of the Alps as well as in the Arctic regions. Moreover, they are found in the ooze at the bottom of seas and oceans, and also in the sedimentary rocks which have been deposited by ancient seas. They are formed by the air acting on the melted surface of the meteoric stone, and are, in fact, a kind of air-bubble of microscopic size. A meteorite which fell in a partially fused condition at Pultusk in 1888 was found to have them sticking to its surface. M. Daubrée has also proved by experiment that granite perforated by a blast of nitroglycerine gases develops such pellets on the fused lining of the blast-hole; and quite recently M. Meunier, another French geologist, has found that the lava-wool formed by the wind blowing on the molten lava of the Hawaiian volcano Mauna Loa, after the manner of "slag-wool," consists chiefly of such mineral tubes and pellets. It is curious to reflect that with every breath we draw we are, perhaps, inhaling the products of some volcanic eruption on the earth or the dissipated fragments of some wandering comet's tail.

An Electric Log.

Admiral Fleuriais of the French navy has brought out an ingenious electric log for telling the speed of a

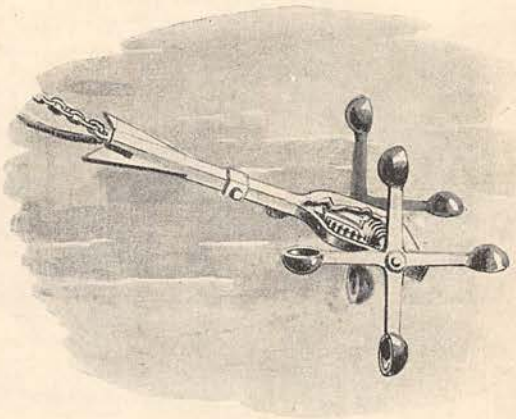


FIG. 1.

ship on board at any time without having to remove it from the water. It consists, as shown in our illustration, of two sets of dishes, Fig. 1, mounted on cross-arms and revolving on the same axle, like the wind cups of the Robinson anemometer. The axle in revolving makes an electric contact every twenty-four turns, and sends an electric current through an electric bell on board the vessel. By counting the number of seconds between two strokes of the bell the speed of the ship is at any time ascertained. The electric circuit is formed by a battery, B, Fig. 2, an electric bell, T, a commutator, R, to change the direction of the current at will, and a cable, L, containing insulated wires.

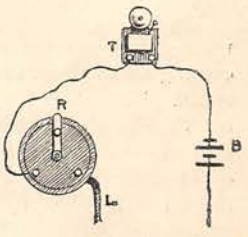
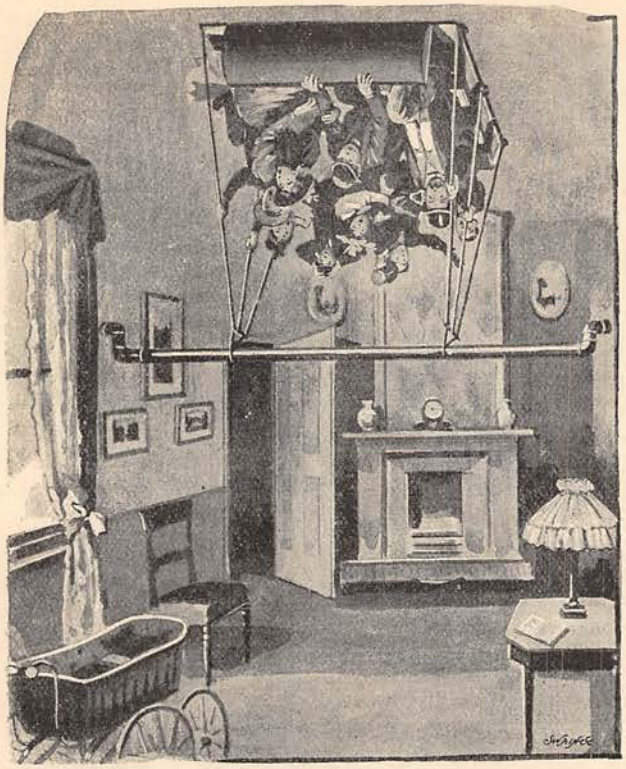


FIG. 2

A Magic Swing.

A magic swing attracted much attention at the last midwinter fair in San Francisco. The visitor was ushered into a chamber which contained the swing, a kind of platform with seats hanging from a bar let into the walls, as shown in our illustration. When the seats were all occupied by visitors the attendant closed the door and gave a slight oscillation to the swing. Presently the oscillations grew larger and larger, until at length the swing mounted to the ceiling and went right over the bar, as pictured. The passengers, however, felt no discomfort of any kind, and their surprise was the greater in that between the bar and the ceiling there was apparently no room for the swing to pass. At last the oscillations diminished, and the swing came to rest. The effect was really an optical illusion, similar to that experienced on seeing a railway



A MAGIC SWING.

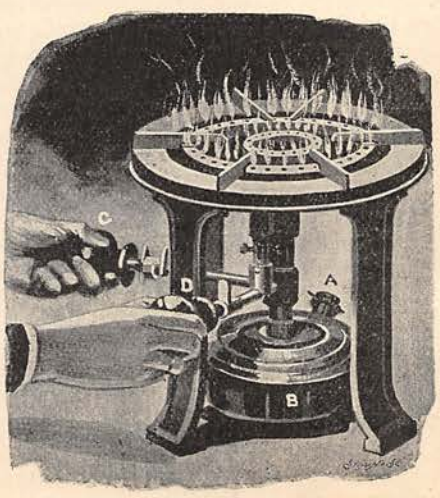
train gliding past the train in which we are seated, and causing us to think that ours is moving at the same speed. The swing itself did not turn round the bar, but the chamber turned round the swing, and the illusion was so perfect that the occupants involuntarily clutched their seats at the turn-over to avoid being thrown out. The furniture of the room, including what purported to be a kerosene lamp, but was in reality electric, and could be inverted without danger, was all designed to keep up the illusion, which was further helped by a baby's perambulator, and a chair with a hat on it.

The Perfect Man.

Dr. Topinard, the well-known French anthropologist, has been giving the world his ideal of the "perfect man" from the standpoint of science. According to the naturalist pure and simple, the perfect man is he who, with the highest sense of his own personality, can best adapt himself to circumstances, and has personal advantages which in the struggle for existence assure to him a pre-eminence over his fellows as well as over other animals and the powers of Nature. The perfect man, in fact, is he who possesses the soundest mind in the healthiest body, and is best able to estimate the importance of his actions and make them conduce as far as possible to the satisfaction of his necessities, his interests, and his pleasure. So much for the ideal man of natural history—that is to say, the perfect man as a mere animal. The picture, it must be confessed, is sufficiently selfish and unamiable; but there is another side to it. From a social point of view, the perfect man, in the opinion of Dr. Topinard, is he who is best adapted to the social condition of life; who possesses in the highest degree the sentiments of fellowship, of justice, of altruism, of duty, of the distinctions between good and evil which have been bequeathed to him by his ancestors and form the essential basis of our social organisation; who regards these as articles of faith and makes them the invariable rule of his own conduct. Again, from a psychological point of view, the perfect man is he whose brain is the sanest, the most philosophic, the most capacious, the most active; who comprehends and retains most, and who can with the best effect draw upon his storehouse of knowledge at a moment's notice.

A Petroleum Fire.

The petroleum fire, or furnace, which we illustrate, is intended for domestic use, and is fed by a mixture of air and gas extracted from mineral essence in the apparatus. The reservoir, B, in the figure is supplied with essence through the mouthpiece, A; and two handles, C and D, serve to regulate the supply of air. The mixture of gas and air burns in the jets above as shown. The oil is gasified by putting a little alcohol into the saucer on the top of the reservoir and lighting it. This heats the interior of the reservoir, and the gas given off is lighted while regulating the supply of air by the handles C and D.—While on this subject we may mention a useful little oil engine for home use, which can be started by a lady. It is shown on the next page, and only occupies a space 33 inches square and 15 inches thick. Nevertheless, it gives from one-half to three-quarters horse-power at its normal speed of 375 revolutions a minute, and is useful for driving small



A PETROLEUM FIRE.

OIL ENGINE.

dynamos, pumps, lathes, punkahs, fans, and so on. The consumption of oil is about a pint per hour, and the total weight of the engine is 200 pounds.

Carbon in the Universe.

Nearly thirty years ago Dr. S. Johnstone Stoney, F.R.S., suggested that the luminous clouds of the sun's photosphere are composed of carbon in a boiling state. If so, their temperature is probably the same as that of the voltaic arc, between 2,000° and 3,000° Centigrade; for, as M. Violle has recently shown, the fixed temperature of the electric arc is apparently due to the fact that the carbon is boiling in it. Everyone knows that the temperature of the water in a kettle remains the same when it boils, no matter how long it continues on the fire, because the "boiling point" of water is a fixed temperature, and the heat supplied to the water goes to make steam, not to make it hotter. In the same way the temperature of the arc remains constant, because the carbon is boiling in it. The luminous clouds of the photosphere are, therefore, comparable to the voltaic arc in point of temperature and luminosity, if not in their electrical condition. Sir Robert Ball, the well-known astronomer, has recently drawn attention to Mr. Stoney's suggestion, and shown the part played by carbon in the Cosmos. We all know its importance in our own planet, since it enters largely into animal and vegetable life, and supplies us with coal and petroleum. M. Moissan, a French chemist, has also proved that at the temperature of the voltaic arc in an electric furnace (2,000° C.), carbon combines with the metals of the alkaline earths, such as calcium, sodium, and potassium to form carbides, which, however, break up at lower temperatures and yield ethylene. It is, therefore, highly probable that in the development of a planet, the carbides, which formed whilst it was incandescent, break up and yield petroleum. Carbon gas in a closed space, suddenly chilled from a high temperature, is also found to crystallise into graphite and the diamond, a fact which may account for the diamonds found in certain meteoric stones.—While upon this subject we may mention that Professor Redwood has examined the petroleum found in a well on the estate of Ashwick, Somerset, and found it to be of superior quality, with a high flashing point and a straw colour. He recommends boring with the diamond drill to a depth of 1,200 feet, at which the limestone beds containing it would be reached.

An Artificial Island.

An enterprising American, Mr. Charles Coen, is about to make an artificial island in the Atlantic Ocean, about ten miles off the coast of Long Island, where the water is seventy feet deep. The foundations will be made with sixty iron caissons, each fifteen feet in diameter, and the island, which is to be called "Atlantis," will contain a first-class hotel in its own grounds. As the new land will be outside the jurisdiction of any nation, the proprietor will be a nineteenth-century Crusoe, monarch of all he surveys, paying neither rent nor taxes, and able to make his own laws.

A Speaking Watch.

The repeating watch that strikes the hours has now a dangerous rival in one that speaks them, and thus saves time. It is the device of M. Sivan, and is illustrated herewith. A disc of vulcanised indiarubber is impressed with the words to be said whilst it is soft, by means of an Edison phonograph, and mounted in the watch as shown in Fig. 1. It

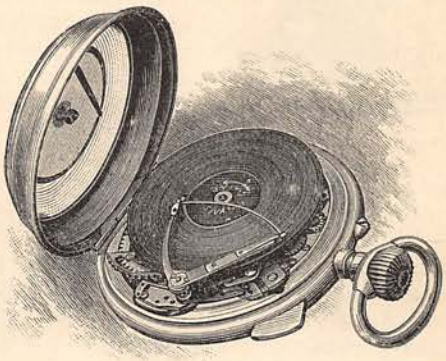


FIG. 1.

carries impressions corresponding to the hours and quarters, and in turning round its axis vibrates a stylus carried by a framework placed over it as shown. The stylus in turn vibrates a drum, or tympan, fixed in the inner case of the watch, and the words become audible. The disc can be started and stopped at will by pressing on a small push-pin. Fig. 2 shows the disc removed and the mechanism on its under side connecting it to that of the watch. M. Sivan has also devised clocks and alarms which call out the time and such commands as, "Now, then, get up!" "It is time to go to bed." These cries may be in the voices and dialects of personal friends, and possess a value as souvenirs. A plate is capable of giving several thousand repetitions without showing

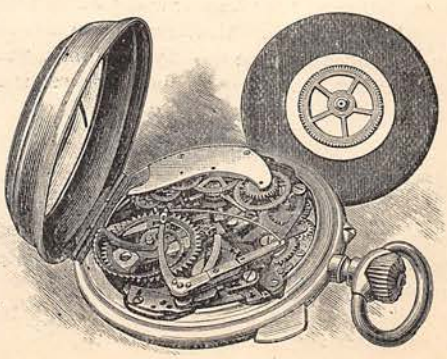
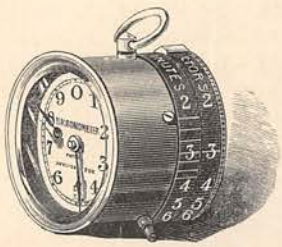


FIG 2.

signs of wear. Obviously when a house is supplied with these talking timepieces it will be necessary to keep them all in good order, otherwise there will be noisy disputes between them as to the correct time.

The Eckronometer.

The length of time necessary to develop a photograph is given by the "eckronometer" of Mr. Watkins, inventor of a well-known exposure meter. It is a small clock with a ten-minute dial, and a hand which is started at the instant the developer is poured on the plate. When the half-tones first appear the exact time is noted and multiplied by the proper factor, with the aid of a slide-rule on the circumference of the clock. An indicator on the clock face is then set to the total time thus calculated, and when the hand reaches the indicator the development is complete.—While on this subject, we may mention that "phototone spectacles," for translating a view into a monochrome, and thus producing the same appearance of light and shade which will be obtained in the photograph, have been brought out. A view may seem full



THE ECKRONOMETER.

PHOTOTONE SPECTACLES.

of interest to the naked eye, but prove tame in the photograph, owing to the different effect made by the coloured lights on the eye and the plate. The new spectacles—shown in the figure—will, however, help the photographer to select his pictures with a view to their photographic value.

Potatoes as Fodder.

M. Girard, a French agriculturist, has found, by experiments on cattle and sheep, that potatoes alone are more fattening than beet or mangold and hay, or than potatoes and hay. M. Cornevin has also shown that raw potatoes increase the supply of milk, whereas cooked ones diminish it, but augment the weight of the animal.

Colours by Electricity.

Mineral pigments are now manufactured by electricity much in the same way as metals are deposited in electro-plating. A bath of chemical salts in solution is prepared, and the current, sent through it between electrodes, decomposes the chemical and produces the colour. Thus vermilion, Scheele's green, mitis green, cadmium yellow, Japanese red, and other pigments, are produced of great purity.

GARDENING IN OCTOBER.

THIS is the month of fruit gathering. Remember to handle ripening apples and pears—as Isaac Walton did the frogs—as if you loved them. More fruit is wasted than one supposes not only by careless handling, but also through gathering at the wrong moment. A pear or any fruit should part readily from the stalk; otherwise, it is not ripe, and will either rot or shrivel. Some varieties of pears in particular want picking at the right moment —*Glou morceau*, for example: a fruit that shrivels very much when gathered before its proper season. Store them in a cool dry place, and in single layers, looking over them often to use those that show the least signs of decay. Fruit trees may be planted, and then they will get established before winter. It is a mistake to think that every leaf must fall before planting may be done. All deciduous shrubs and trees also plant, even evergreens; and "chill October" is the time to put in bulbs, the earlier in the month the better.

The golden rule is to get everything in its place before winter, when little growth takes place. The plants or shrubs, as the case may be, are then well-prepared to withstand the trials of frosts and hardships incidental to that season. If not done, plant carnations, and prepare for spring by getting into their places the primrose, polyanthus, violet, and arabis. Primrose and polyanthus are cherished favourites, and give a wealth of lovely colours, rich and varied, accompanied by sweet fragrance. Auriculas in frames should have plenty of air; and when dahlias, cannas, and such things, are cut down by frosts, clear away the stems, and store the roots in a dry airy cellar. Any geraniums that have given pleasure during the summer, and are to be retained, are not really safe after the few first days of October. Lift and pot them in ordinary garden soil, and place them in the greenhouse, where they will continue to flower. Celery must be earthed up when necessary. The object of this is to both blanch and protect it.

Keep the kitchen garden quite free from weeds. Greenhouse plants should have plenty of air on mild days; and prepare for frosts by heating with a boiler of the character recommended in our chat on "The Greenhouse."

CHRYSANTHEMUM COMPETITION.

WE would remind our readers of this Competition, full particulars of which were published in our last number. Prizes are offered to both Trade Growers and Amateurs for the best specimens of the different varieties named, and the Exhibits will be judged by one of the leading authorities on the subject. For the dates of sending in and the regulations governing this Competition, we must refer our readers to page 800 of the September number.