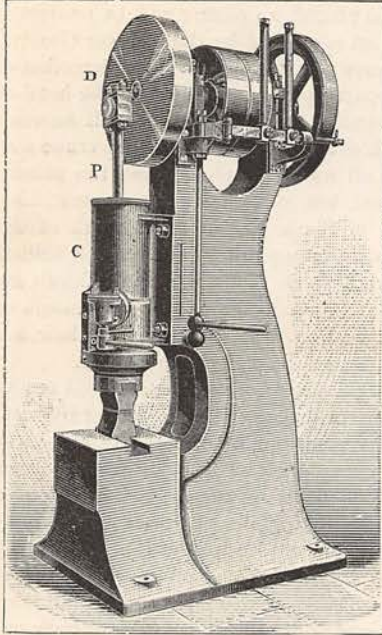


THE GATHERER :

AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, LITERATURE, AND SCIENCE.

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 Pneumatic Hammer.

The woodcut illustrates a hammer which is worked by the rarefaction and compression of air in the cylinder shown at C. The rarefaction and compression are effected by a plunger, P, attached to a revolving disc-crank, D. With a velocity of 100 metres per minute of the plunger the pressure* of the air in the

cylinder rises to four atmospheres. The hammer is made in five sizes, the smallest requiring about a horse-power to drive it, and the largest four horse-power.

Eucalyptia and Malaria.

"To the Editor of CASSELL'S MAGAZINE."

"DEAR SIR,—I have discovered a new, and to my mind a very important, use for the "Pinol Eucalyptia Dry Inhaler," of which you gave an account a short time ago in the GATHERER. The Gold Coast is undoubtedly one of the most unhealthy places in the world, and malarial fever is the cause of the sickness and death of about eighty per cent. of the white residents there. I have not escaped the penalty of living in that country; but it may be interesting, and also useful, to your readers to know how I became proof against the malaria during the last six months of my residence there.

"Malaria is due to the poisonous germ-laden vapours rising from the swamps and gullies that are filled with decaying vegetable matter. These germs, taken into the lungs with the breath, poison the blood and thus produce malarial fever.

"It is a well-known fact that eucalyptia is one of the most powerful antiseptics, and it has been proved that microbes cannot exist when eucalyptia is present. I acted on this principle, and procured one of these

Dry Inhalers, charging it with eucalyptia, and used it every morning on leaving my house, with the result that I have been perfectly free from malaria, and enjoyed excellent health from the time I adopted this plan, notwithstanding that the fever was raging in the district at the time.

"Trusting others will benefit by my experience,

"I am, dear Sir, yours truly,

"A. McSWINEY.

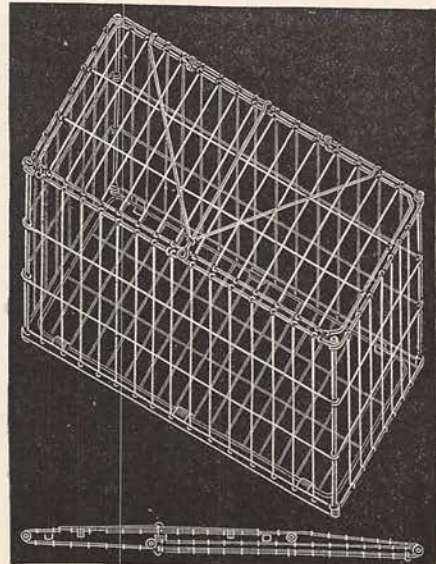
"Axim, Gold Coast."

Street Indicators.

Paris is to be provided with comprehensive street indicators in all the principal thoroughfares, and the first of these has recently been placed on the Boulevard Magenta, close to the Northern Railway terminus. The indicator is supported by a figure in bronze, has four faces protected by glass, and is illuminated by night. The information given comprises the locality of all the post offices, police stations, fire brigade stations, hospitals, charitable institutions, omnibus stations, &c., in the neighbourhood; together with the names and addresses of the public officers, physicians, apothecaries, dentists, &c., of the district. Some such indicators would be useful in other cities than Paris, and would save many inquiries of police constables and others.

A Collapsing Crate.

A crate of stout iron wire, which is capable of folding up so as to go into small bulk, is shown in our woodcut. The top and bottom are hinged to the



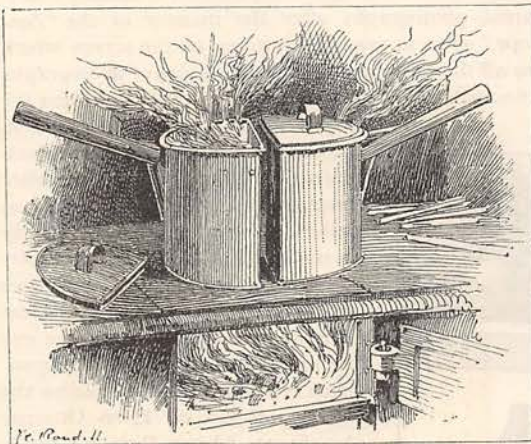
sides, and when the crate is required, they are closed up and secured by hooks on the edges. No rope or nailing is employed to fasten the receptacle, which is particularly useful in railway travelling. It can, of course, be lined inside.

Whale v. Cable.

In the early part of September last a "fault" broke out in the submarine cable between Santos and Santa Catharina, on the east coast of South America. Communication was not entirely interrupted, and signals could be exchanged by the telegraph clerks at both ends. The "flaw" was localised by suitable tests, and the Western and Brazilian Telegraph Company, who own the cables, despatched their repairing steamer, the *Viking*, to grapple for the cable at that spot. On September 17th, while picking up the line in fifty-seven fathoms of water, at a point about seventy miles north of Santa Catharina, the body of a dead whale came up entangled in its coils. The carcass appeared to be about fifty feet long, and was much decomposed. The cable parted under the unusual strain, and the body of the whale rose to the surface and burst, from the imprisoned gases. The crew of the steamer were glad to see the offensive object drift to leeward. It was noticed that the skin of the leviathan was encrusted with barnacles; and it is probable that in trying to free himself of these pests, by rubbing against the cable, the animal was caught by the tail and perished for want of air. This is the third recorded instance of a whale being snared in a submarine cable.

Compact Saucepans.

For kitchen ranges of limited compass the saucepans we here illustrate will be found useful. Two of them, thanks to their shape, can stand on the round

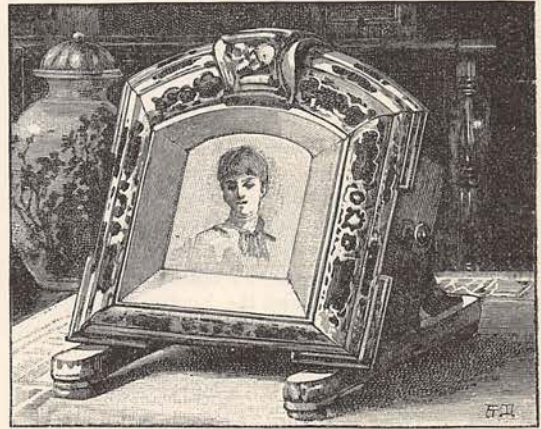


hole in the top of a kitchener and occupy little more room than one ordinary saucepan. In open grates they will drop into the fire and bring their contents to boiling-point very quickly.

Electrical Tanning.

The electric current has been successfully applied to facilitate the process of tanning hides, in a tannery at

Bermondsey. The hides revolve slowly on a frame in the tan liquor, which is of the ordinary sorts; and the current from a dynamo is passed through the vat. It is said that the electricity hastens the union of the tannin in the liquor and the gelatine of the hides, thus shortening the time of tanning from several months to several weeks.



A Rotary Album.

A device called the "photophoscope," for showing photographs, one after another, by the turning of a handle, is illustrated herewith. It consists of an ornamental frame with a photograph-holder behind, and as the handle seen on the right is turned, the photographs appear in succession. The number of pictures is only limited by the size of the appliance; but twenty-one will probably be sufficient for most private purposes. It is chiefly intended for the drawing-room table, but it may be useful in other circumstances.

Tannin in Tea.

Mr. D. Hooper, F.C.S., of Ootacamund, India, has made an elaborate analysis of Indian teas, and finds them, especially the best brands, rich in tannin, which is the source of the "strength" or "body" of the infusion. He recommends that the best Indian teas should be regarded as "strong teas," and either diluted with Chinese tea, which, as a rule, is weaker in tannin, or the infusion should be made with a smaller quantity of the leaves and during a shorter time. With a smaller quantity, good water, and an infusion of not more than ten minutes' duration, he thinks we should hear less of this "deleterious ingredient," tannin. The tea-broker's infusion for five minutes removes about one-fifth of the extract from the leaves, one of ten minutes removes a third, one of fifteen minutes a half, and one of twenty minutes two-thirds of it.

A Gigantic Cuttle-Fish.

A specimen of the king cuttle-fish or gigantic squid was recently stranded at Blacksod Bay, on the west coast of Mayo. Though shrunk and maimed when it was examined, the body of the animal measured sixty

feet in circumference, including the short arms. The length of each tentacle was thirty feet, and the girth in some parts four feet; so that the span of the animal was at least seventy feet. One of these ocean monsters, which might well be mistaken for the great sea-serpent, was cast ashore on Kerry more than 200 years ago; another was reported from the banks of Newfoundland, a third from Shetland, and a fourth was picked up off Boffin, Isle of Mayo, some fourteen years ago, portions of which are now in Dublin Museum.

Sterilised Milk.

The Dahl process of sterilising milk has recently been introduced into London. Fresh milk is placed in cans which are hermetically sealed, then heated and cooled alternately until the germs are destroyed. The milk can then be kept for years without losing its freshness, or failing to yield cream and butter. It has been found useful on steamers; but it is likely to find its way into the nursery, and the kitchen too, if, as is claimed, all danger of infection is avoided by its use.

Testing Fast Colours.

It is stated that if a piece of dyed cloth is damped and rubbed on clean white paper it will leave no stain if the dye is a "fast" one. Another test is to lay the cloth between two sheets of paper and iron it. There should be no mark in this case either. Again, if the cloth is covered with a perforated sheet of thick paper and exposed for some hours to direct sunlight, the colour of the exposed parts should not fade.

An Instantaneous Boiler.

Our illustration shows a boiler which has hitherto been a desideratum for use in connection with domestic or small-power motors. Its peculiarity is that steam can be got up almost immediately. This is owing to the form of the heating coil in which the water is vaporised. From the corner figure on the right it will be seen that this is a flat spiral of iron or

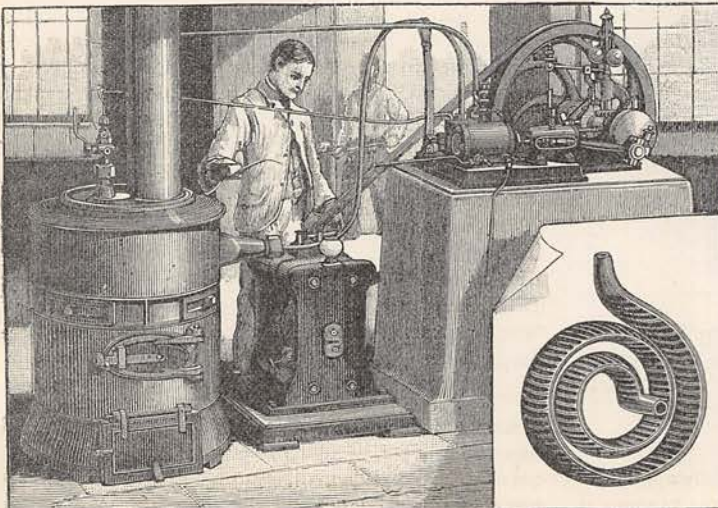
copper, and it lies directly over the fire-box or furnace. The bore of the tube is so narrow that the water is quickly heated as it passes in a continuous stream through the spiral. The steam leaves it in a superheated condition, ready for the motor. The figure shows the boiler and furnace applied to work a small motor, as well as a small dynamo for electric lighting, the latter being shown in the middle. The boiler is the invention of M. Serpollet, and a variation of this form has been successfully applied to drive a sociable tricycle. The total weight of the engine, boiler, and vehicle is 185 kilograms, and it can be driven at a speed of 25 kilometres (or about twenty miles) an hour.

The Old Etruscans.

In a recent GATHERER we referred to the arguments in favour of classing the Amorites, or blonde race of Palestine, and the Guanches of the Canary Islands as members of the same race as the ancient Libyans, who are now represented by the blonde or red-haired Berbers and Kabyles of Northern Africa. English visitors to Algeria have sometimes been struck at seeing tall sandy-haired men in the guise of the dark fallow Arabs, and the theory went that they were descendants of the old Goths. This theory is now believed to be erroneous; and this far-travelled blonde race are likewise identified by Dr. Brunton, an American ethnologist, with that mysterious people the ancient Etruscans. The Etruscan traditions accord with this view, for they place the origin of their race in North Africa (or ancient Libya), from which they crossed the Mediterranean into Italy.

A Photographic Lantern.

Mr. Frieze Green, the well-known photographer, has introduced a magic lantern which combines transparent photographs after the manner of the "Zoe-trope," so as to produce an image on the screen which has all the movements of life. A series of photographs is first taken by a special camera, so as to represent the object in all phases of its motion, and these are rendered into transparencies, then placed one after another on a long strip wound on rollers. When this strip is rapidly passed through the lantern, the persistence of the successive images on the retina appears to blend them into one and produce to the eye the effect of animation. The apparatus is similar in principle to the "Tachyscope" of Herr Ottamar Anschuetz, of Lissa, Prussia; but in this the transparencies are arranged in order round the edge of a revolving wheel, and each is illuminated from behind by a Geissler tube as it passes by. The spectator sees a picture apparently endowed with life. Artists may find a use for these appliances in



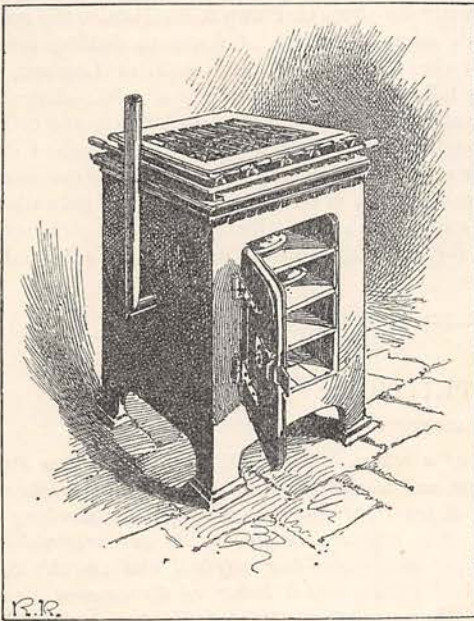
studying the movements of men and animals. They will also be useful to the public lecturer.

A New Street-Cleaner.

Everyone must have felt that the London streets are not only ill-cleaned, but a cruel footing for horses, especially in bad weather. A satisfactory street-cleaner is therefore a want which should stimulate inventors. The Hercules cleaner consists of a tank-cart holding 300 gallons of water, with a sprinkling hose attached in front, and a screw-shaped revolving brush of indiarubber underneath. Both brush and hose are controlled by the driver of the vehicle, and one horse is sufficient to pull the machine on wood or asphalt paving. It has been tried successfully in some metropolitan parishes. It answers equally well in dry weather, since it wets the dust before brushing it away. According to the Surveyor to the Clerkenwell Board, one of these machines, which can be used on granite paving, too, effectually cleansed an area of 1,980 square yards in nine minutes with an expenditure of 600 gallons of water.

A New Gas Cooker.

The Wilson gas cooker, which we illustrate, is a combined grate and oven, in which all taint of gas is excluded from the viands. It consists chiefly of an oven, provided with three shelves, and a tiled floor. The heating is external and regenerative—that is to say, the air is first warmed before it passes to the

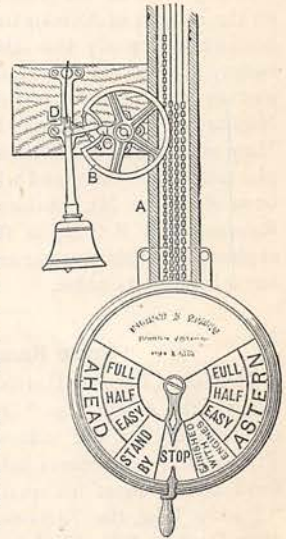


row of gas-jets which form the furnace. The gas and air are well mixed by a "baffle-plate" before combustion, so that the heat is intense; but it is confined to the cooker by asbestos packing, thus rendering the vicinity of the stove cool. It is stated that a dinner for fifteen persons can be cooked with this appliance

at a cost of 2d. for the gas consumed. While upon this subject we may mention that, at a recent meeting of the Glasgow Philosophical Society, Mr. D. R. Gardner pointed out that an ordinary gas globe can be made "regenerative" by laying a cover fitted with apertures of the proper size to admit of up draught over the top orifice of the globe. This simple device heats the air in the globe, which feeds the flame, and makes the latter yield a much better light for the same consumption of gas.

A New Engine-Room Telegraph.

To the ordinary engine-room telegraph an addition has been made which is likely to prove serviceable, and has been adopted on one of the Allan Line steamers. The device is shown in the accompanying figure, where A is a copper chain connected with the indicator in the engine-room, and running round a pulley, B, which has a projecting finger, C, on one side of its centre. When the indicator passes the word "stop," the chain turns the pulley, and brings the finger into contact with a crank, D, which is fixed on the top of the bell, as shown. This actuates the hammer of the bell and strikes a loud note, which warns the engine-driver to reverse the engines, while the indicator itself shows whether it is to be "easy," "half" or "full" speed. One advantage of this alarm-bell is that, should the engineer be some distance off, the loud stroke of the bell will call him back. The improvement does not interfere with the usual gong signal.



Colour-Printing on Metal.

A process of printing in colours upon metals has been devised by M. Cesar F. Josz, of Brussels, and brought out in London. The plates, of zinc or other metal, are first coated with copper, nickel, or both, and these are printed on from stones, after the manner of the lithograph. Enamel colours are employed, and the results are very striking. Some elegant show-tablets prepared in this way, and either plain or embossed, have been exhibited.

"Household Wrinkles."

This is the very appropriate title of a book of household recipes just issued by Messrs. Longmans. The author is Mrs. De Salis, whose *à la mode* cookery books we noticed as they appeared. Not a few of the wrinkles and notions that the book contains have

been given to readers of the *GATHERER* at one time or another in these pages, though, of course, not in quite the same form. After giving postal and other general information, the volume goes on to supply, in alphabetical order, hints on every conceivable subject of household interest, from the privileges of ambassadors and the treatment of accidents, to the manufacture of tooth-powder and the whitening of pianoforte-keys. Decidedly this is a book to have within reach.

Stanley's Routes.

The routes of Mr. Stanley's seven African marches are all shown very clearly on the large map of "Stanley's Explorations in Africa," which Messrs. G. Philip and Son have just issued. Readers who want a handy clue to the innumerable newspaper articles on the subject of African travel, cannot do better than procure and study this clear map. It is three-and-twenty years since Mr. Stanley made his first African journey, as a press correspondent in the train of Lord Napier of Magdala on his Abyssinian campaign. How much has been done in the way of African exploration since then, and what a large share of it has been done by Mr. Stanley, is shown by Mr. E. G. Ravenstein, F.R.G.S., in the *résumé* of the intrepid explorer's travels that accompanies the map, and adds not a little to its value.

"Uncle Remus" Again.

Mr. Joel Chandler Harris is better known on both sides of the Atlantic as "Uncle Remus" than by his own name. In the volume just published by Mr. Fisher Unwin he comes before us once more with a fresh collection of his quaint stories, under the title "Daddy Jake, the Runaway, and Short Stories told after Dark." "Daddy Jake" himself is worth knowing, though he is not to be mentioned in the same breath with his fellow-character, "Uncle Remus." Jake runs away under the impression that he has killed a bullying overseer in anger. He is followed by his

master's little boy and girl, who are very dear to the old negro, who has long been their father's coachman. The children find Jake and explain to him that the overseer was not killed, but lived to be dismissed for his tyranny, whereupon Jake returns in triumph with the children, whose absence has caused no slight misery. It would be futile to attempt any analysis of the short stories that make up the rest of this charming volume. "Brer Rabbit," "Brer Fox," and "Brer Tarrypin" all play their humorous parts again, and will be gladly welcomed by all their old friends. Perhaps "How Black Snake Caught the Wolf," and "Brother Rabbit's Courtship," stand out among the other stories, if any may be said to stand out where all are so good. And it is eminently satisfactory to find that the courtship was successful, and to close the volume with the pregnant sentence, "But Brer Rabbit, he got de gal!"

Two Books of Reference.

The "Metropolitan Year Book" for 1890 (Cassell & Co.) has grown considerably in bulk, although this is but its second year of issue. The information that was given last year is revised throughout, and fuller particulars are given in many instances, notably in the space devoted to the London County Council and other matters of Local Government. The area dealt with in the volume is that under the Government of the County Council, and to all residents within that area, the volume ought to prove at once handy for reference, and full of instruction. The "Educational Annual" for 1890 (G. Philip & Son) is also the second year's issue of a work of reference dealing broadly with the whole educational world of England, and very fully with every department of public elementary education. All the intermediate schools and colleges throughout the country will be found classified under their respective towns, and grouped under the counties for convenience of reference, with a brief indication of the curriculum and the fees payable at each school, and the advantages offered in the way of scholarships.

NEW STORY COMPETITION.

OPEN TO ALL READERS OF CASSELL'S MAGAZINE.

WE announced, in our January number, the particulars of a scheme under which we offered two Prizes of Eighty and Sixty Pounds, respectively, for the best and second-best new and original Eight-part Serial Story. But many of our readers have not at their disposal the time necessary for the working out of a story which must contain 80,000 words, so we have now pleasure in adding to our original offer another two Prizes, of £40 and £30 respectively, for the best and second-best original and suitable Story of domestic interest, half that length, or 40,000 words. These Prizes, which bring up the amount already offered this year to Two Hundred Guineas, are subject to the regulations printed on page 122 of our January number, save that MSS. of these shorter stories will be received up to and including September 1st, 1890. Each story must be divided into four parts of equal length, and must be accompanied by a short outline (about 500 words in length) of its plot, together with a brief résumé of the contents of each of the four parts, showing the progress of the story. Intending competitors are advised to read carefully the full regulations (p. 122) before sending off their MSS., as no irregularities can be set right afterwards, and no prize can be awarded to a story which does not comply in every respect with the regulations, as modified above in the matters of date, and the length of the story.