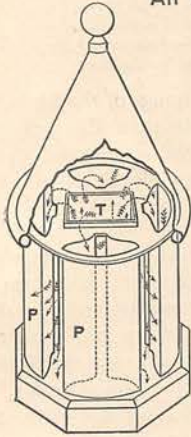


THE GATHERER :

AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, 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.

An Exhaust Ventilator.

Our illustration shows an improved ventilator with part of the conical cover removed, by which the action can be explained. A wind striking the bottom part of the ventilator passes through narrow ways between the slotted pipes P, P, and creates a partial vacuum in the conical chamber above, which draws up the foul air from the house by the central tube, T, and allows it to escape by the slots down the inner sides of the pipes, P, P, as shown by the curved arrows.

The Telephotos.

The "telephotos" is a new means of signalling which has been invented by Mr. C. V. Boughton, of Buffalo, N.Y., and is chiefly intended for use at sea. It consists in producing the dots and dashes of the Morse telegraph code, with the intervals between them by a row of electric incandescent lamps. A dot is made by lighting one lamp, a dash by lighting ten lamps, producing an illuminated line five feet in length, and an interval or "space" by leaving a length of five feet unlighted. In order to work this visual telegraph a keyboard is provided, by which and the help of wires, the proper lamps are lighted and the signals made.

The First Atmosphere.

Dr. Phipson, F.C.S., has made some interesting experiments in growing plants under different gases which have led him to a very probable hypothesis concerning the primitive atmosphere of the earth. The plants belonged to various species—for example, the trifolium, myosotis, and convulvulus—and were nourished by water. He found them to exist for a time, then die, in an atmosphere of carbonic acid gas; to prosper better in one of hydrogen, which they finally absorbed and oxidised; and to thrive well in one of nitrogen, especially if it contained one-third part of carbonic acid gas. From these results he argues that the primitive atmosphere of the globe consisted of inert nitrogen gas commingled with carbonic acid gas and other vapours thrown out by the numerous volcanoes then at work. Vegetation would flourish in such a medium, but animal life would not. The plants, however, by absorbing and decomposing the

carbonic acid—a combination of carbon and oxygen—would in time discharge a sufficiency of oxygen into the atmosphere to enable the lower forms of animal life to exist, and as the proportion of oxygen increased, higher types of animals would make their appearance. The process is not complete even now, it appears, for the proportion of oxygen in the atmosphere is still slowly increasing, if the tests of the past fifty years can be relied on. The speculation, it will be seen, is in harmony with the doctrine that vegetation preceded animal life on the planet; and the fact that combustible—that is to say, oxidisable—substances, such as graphite, sulphides, and so on, are frequent in the primitive rocks would seem to imply that the first atmosphere was free from oxygen, and incapable of combining with these substances.

A Straining Lid for Saucepans.

The accompanying figure shows a new lid for saucepans which allows of the gravy or water being



all strained away without the lid being lifted. The flap of the lid is raised, and the liquid simply poured out through the strainer, while the solid contents are kept back.

A Shattered Comet.

The comet discovered by Mr. W. R. Brooks in America has undergone surprising changes since it was first observed. Professor Barnard of the Lick Observatory, has taken several photographs of it, and on comparing them it was found that the tail had twisted and broken up into knots and masses, while the brightness of the entire body had much increased. Further, a large portion of the tail became detached and drifted away as a separate comet travelling in a path of its own.

An Air-Brush for Artists.

The art of drawing and painting by a fine jet of spray is growing in the United States, without, however, superseding the older methods. It enables an artist to put his conceptions or impressions more quickly on paper than with the pencil or brush, and



FIG. 1.—THE AIR-BRUSH.

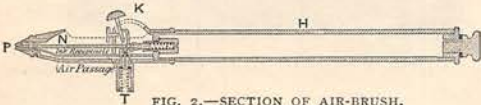


FIG. 2.—SECTION OF AIR-BRUSH.

the shading is more delicate and transparent than with a wash or stamp. The air-brush consists essentially of a holder containing a quantity of the ink or liquid colour to be used, and a tubular point with a fine bore. Compressed air is allowed to escape from the point in such a way as to drag a portion of the colour with it in a fine spray which strikes on the paper. Figs. 1 and 2 represent a new air-brush invented by Mr. Charles L. Burdick, an artist of Chicago, and recently introduced by him into London. The reference letters are the same in both figures, and the interior will be understood from Fig. 2, showing a section of the tool where H is the holder, T a tube by which the air enters it, and passes to the hollow point P in taking with it some of the ink or colour in the "ink receptacle." A needle, N, regulates the size of the discharging orifice at P, and consequently the mark of



FIG. 3.—WORKING WITH AIR-BRUSH.

the spray. The brush is held in the hand like an ordinary pencil or brush, and the spray is regulated by pressing on the key K. Fig. 3 illustrates the manner



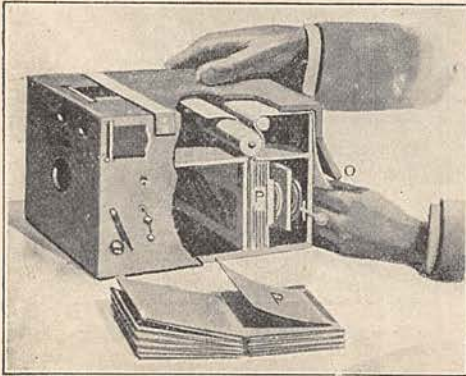
FIG. 4.—SPECIMEN OF WORK BY AIR-BRUSH.

of using the brush, while the foot of the artist works a pedal air pump, which compresses air in the reservoir on the left, and supplies it through a flexible tube to the brush. Mr. Burdick has devised a special form of foot pump, and also a fountain air gauge, which is hung on the easel, and shows the artist at any moment the precise air pressure he is employing. The artist can draw a line varying in width from that of a pencil to nearly an inch without change of colour, or he can imitate the softest and most delicate as well as the darkest shadows. Fig. 4 is a specimen of the work done by Mr. Burdick in a few minutes. Photographers will find the brush very useful in retouching or tinting portraits, and lithographers, architects, and other draughtsmen in making their designs.

Household Novelties.

We have before us this month a number of those minor inventions, the application of which goes so far to make improvements in our domestic machinery and comfort. Who, for instance, has not felt the want of rapidly-boiling kettles and saucepans? Here in the "Maycock" cooking utensils, fitted with a pierced outer shield, is all that could be desired; for the shield at once draws up the heat, and protects the utensil from those knocks which go so far to damage kettles and saucepans of the old type.—Then staining floors and other woodwork about a house is a piece of work that must often be done at home. For this a new series of stains, known as "Flooring," has just been introduced, by means of which the whole work can be effected at a single operation. The stains are made in various shades, and seem to give an excellent result when carefully applied.—The "Silver Wing" tap is a new contrivance for drawing-off aerated waters, or other sparkling beverages, glass by glass, without leaving the rest of the contents of the bottle exposed to the air. The tap is plated inside and out, and is fitted with a screw-shank that pierces the cork like a corkscrew. In sound corks this little

device should act well.—An automatic tea and coffee canister has just been patented. It is fitted with two lids, large and small. The large one is only used for filling the canister, and the tea or coffee is removed by the smaller opening, which is so contrived that only the quantity actually removed is exposed to the air.



A MAGAZINE CAMERA.

A Magazine Camera.

The accompanying woodcut shows a magazine camera which holds fifty plates, and permits of the same number of pictures being taken at one charge. The plates are mounted on travelling paper, and folded together as shown at P, P. After a photograph has been taken the plate is removed from the camera by pulling on the travelling paper, which passes between two rollers and emerges at O in the rear of the camera.

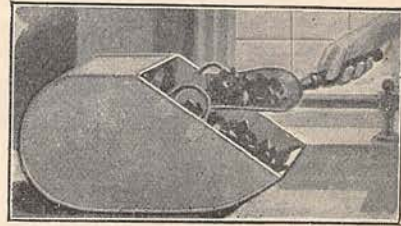
A Magical Lamp.

Tesla and other electricians have shown that electric currents of very high potential and frequency, that is to say, currents of great pressure and rapid reversal in direction, have no appreciable effect on the human body, so far as can be felt. Quite recently M. d'Arsonval, a well-known French electrician, has shown that if such a current is passed through a spiral of wire large enough to surround a man without touching him, he can light a glow lamp by simply holding it between his two hands, and yet he feels no inconvenience. In fact, M. d'Arsonval has applied his electrified spiral as a curative agent. The electrical influence is said to promote the nutrition of the patient, and largely increase his absorption and elimination of oxygen. Be this as it may—and further experiments are desirable before accepting the statement—there seems little doubt that magnetism pure and simple has no sensible effect on the human body, curative or otherwise, for Mr. Kennelly, a distinguished assistant of Edison, has recently made a large number of experiments with the most powerful magnets known, and all with negative results.

A Noiseless Coal Scuttle.

The harsh grating of the metal scoop on a metal coal-scuttle is often irritating and disagreeable to

invalids and students, or persons of delicate nerves, and hence the scuttle which we illustrate will be found useful. It is made of leather and lined with cloth,

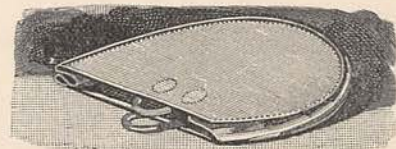


A NOISELESS COAL SCUTTLE. FIG. 1.—IN USE.

and capable of folding up when not full of coals. The scoop is also covered with a material which diminishes the grating of the coals upon it, and the utensil is both light and portable.

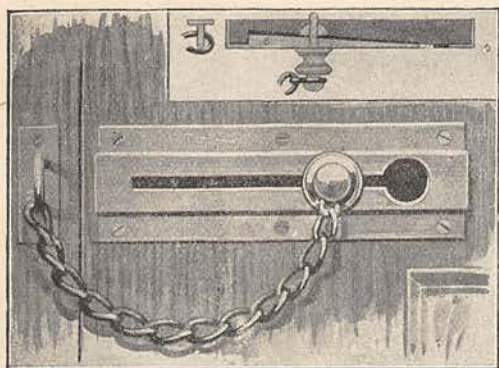
Mental Images.

"A man conversing in earnest," says Emerson, in his essay on Nature, "if he watch his intellectual processes will find that a material image, more or less luminous, arises in his mind, contemporaneous with every thought, which furnishes the vestment of the thought." This power of forming mental images appears to vary in strength among individuals to a considerable degree. Naturally we should expect to find it powerful in poets and artists. Charles Dickens has himself told us that he actually "saw" his creations as he wrote, and M. Taine mentions a painter who only looked at an object while he sketched its outline and was able to fill in the colours from the image of it in his mind. On the other hand there are people of equal intelligence who, being unable to see such mental images themselves, have doubted their existence, and Mr. Francis Galton has shown that habits of abstract thought, such as men of science and philosophers indulge in are apt to weaken the capacity of forming mental pictures. Mr. Kirkpatrick, of Winona, Minnesota, an experimental psychologist, has made a series of observations on this phenomenon with the help of his classes. The scholars were asked to write down just what came into their minds when certain familiar words, such as "book," "tree," "church" were called out, and the answers were carefully investigated. He found that the majority of the students formed distinct images of the objects



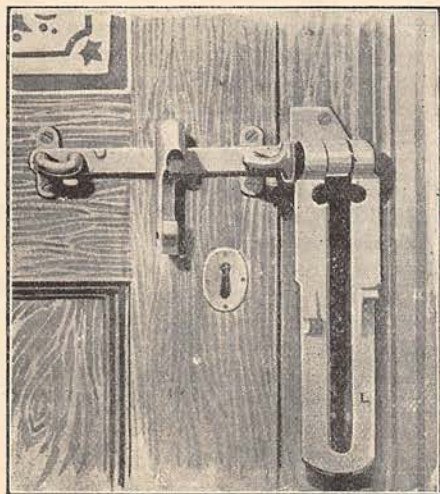
A NOISELESS COAL SCUTTLE. FIG. 2.—FOLDED.

corresponding to the words; and the rest formed indistinct images, with a few exceptions who seem to have indulged in philosophical abstractions. The



NEW DOOR-FASTENERS.—FIG. 1.

word "book," for example, called up visions of a Bible, a dictionary, a novel, in all but a few scholars, who thought of "food for the mind," or "the thoughts of some person." The word "tree" was represented by some kind of tree, more especially the illustrious cherry tree which George Washington cut down. The word "church" usually evoked a picture of some church in the vicinity, but some of the hearers thought of a "religious organisation." It is evident from his results that most people are "visualisers" in thinking, while a few are "non-visualisers." The tendency to form distinct images was very conspicuous amongst the female students, and in both sexes it reaches an abnormal development about the ages of 14 and 15, or during the period of adolescence, which, it has been otherwise observed, is also one of exceptional good health and rapid growth. The tendency is further checked or fostered by the occupations in life.



NEW DOOR-FASTENERS.—FIG. 2.

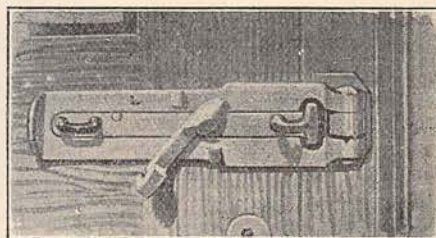
New Door-Fasteners.

The door-chain which we illustrate in Fig. 1 can be adjusted to allow the door to open to any length of the chain. This is simply effected by an adjustable clamping nut which fixes in the slot and is adjusted by the

knob at will. The greater the pressure on the door the faster the nut holds, owing to the section of the slots being tapered. The new "Lightning" door bolt is shown in Figures 2, 3 and 4. It is not a bolt in the ordinary sense but a kind of hasp or slotted link, L, which hangs down the door-post when not in use. Being on a swivel joint a half turn of the wrist brings it into a horizontal position across the ledge of the door where it is fixed on the bar as shown. Fig. 4 illustrates its action as a door-chain.

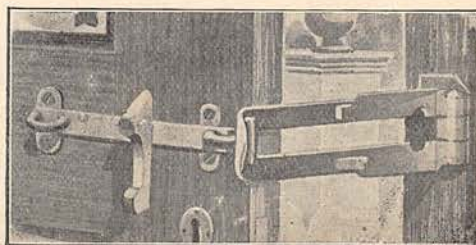
Taste in Colours.

Each to his taste is a proverb which has been held to apply to colours as well as flavours. Anthropologists, however, are inquiring whether there is no law or rule in the matter of colours, at least. They find that savages prefer bright colours. The negro of Africa, the American Indian, and the Polynesian



NEW DOOR-FASTENERS.—FIG. 3.

prefer red. It is the same with the New Caledonian, according to Captain Cook; and a red object is "taboo" to the New Zealander. The Gabonese, writes Dorlhac, only used red, white and black pigments before the Europeans came, and now blue is their mourning colour. Red is also preferred by the Kaffirs and Afghans. Purple, again, was the choice of the ancients; and red was the predominant colour of their military uniforms. As for the northern peoples, they seem to prefer sombre colours. Blue is preferred and yellow is avoided, not to say ridiculed. In Japan a Prussian blue or a greenish blue is most common in clothing. The Ainos of Yezo also prefer blue and tattoo themselves that colour. These facts are worth noting by exporters of woven stuffs. De Brazza always took red cottons to the Congo, whereas in the Soudan blue cottons are preferred. The negro Mussulman prefers blue and the negro fetichist red.



NEW DOOR-FASTENERS.—FIG. 4.

In India clothes are red and yellow rather than blue, and the same may be said for Cochin-China, where the gods are usually gilt. The Indians of Guiana love a yellow bottom colour; so do the negroes of the Antilles. In Tahiti the natives affect pale red tints. Many of us will remember that in recent years attempts have been made to show that because words for certain colours are not found in some early languages or poems, the authors, if not the readers, had a deficient colour-sense. Did not Mr. Gladstone point out that Homer has no special term for green, blue and violet? The ancient Israelites only mention white, black, green, and red. But common sense bids us first reflect that people in an early stage of culture before their language had become specialised, had no distinct words for certain shades of colour, especially shades which did not strongly appeal to their colour-sense. There are many tints in Nature or in aniline dyes which have no special name with us; but what should we think of our posterity if they inferred that our colour-sense was not sufficiently developed to recognise them? Not to put too fine a point on it, we should think they were fools. The Battas of Sumatra had no term for blue until they were able to borrow the Dutch word, but they appreciated the colour well enough. Negroes, again, have borrowed our English word "blue." The Egyptians had a just sense of the harmony of colours, but they only employed red, green, brown, black, and white. The Assyrians and Persians, judging from their enamels, preferred blue and yellow. The Greeks affected red, blue, and yellow. In dealing with such early art, however, we must be careful not to infer too much from it, and make a similar mistake to those who supposed the ancient writers deficient in colour-sense. We must remember that pigments, like words, have first to be invented or discovered before they can come into use, although the thing they stand for is already in existence.

A Musical Fire-damp Detector.

The "Formenophone" is an instrument for detecting and measuring the fire-damp or inflammable gas in the air of a mine. It is based on the principle that the note of an organ pipe depends on the density of the air feeding it. Two similar organ pipes are provided, and one is fed with pure air, the other with the air of the mine, and if fire-damp is present in the latter the two pipes no longer give the same note. "Beats" are the consequence, and the proportion of the fire-damp in the air is determined by the number of beats



A MUSICAL FIRE-DAMP DETECTOR.

in a second. Our illustration shows the operator counting the beats given with the apparatus at his feet. The apparatus is arranged to give a beat per second for each percentage of inflammable gas.

THREE-PART STORY COMPETITION.

AWARD.

A LARGE number of MSS. was received for this Competition; but the result is very disappointing, and in most cases the standard of excellence very low.

The First Prize of TWENTY-FIVE POUNDS has been gained by

BESSIE E. DUFFETT,
Mead-Vale,
Redhill.

The Second and Third Prizes are withdrawn, in accordance with No. 6 of the General Regulations under which the Competition was conducted, there being no MS. adjudged worthy of either prize.

We would remind our readers that the HOLIDAY PROGRAMME COMPETITION closes on March 1st; and that all the MSS. for the SHORT STORY COMPETITION must reach us on or before the 10th April.