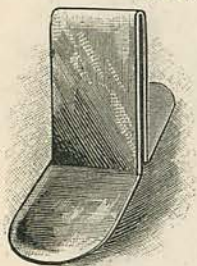


THE GATHERER:

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 Simple Book-Holder.



The book-holder which we illustrate has been devised by one of the officials of the St. Martin's Free Public Library, Trafalgar Square. It is made of wire or sheet iron and bent in the manner shown, forming a vertical wall in the middle with a flap at either side. These flaps enable the holder to stand fast. The holders are simple, strong, and cheap, and specially intended for public libraries.

Green Carnations.

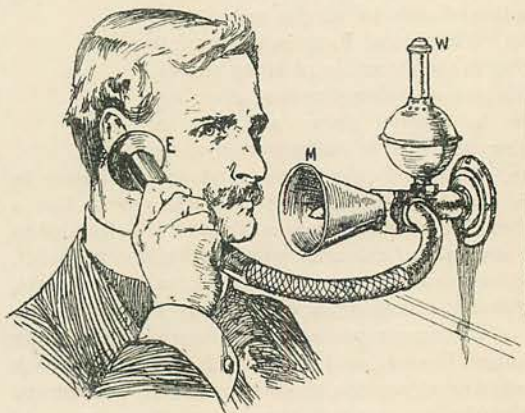
The green carnations which are now to be seen in the flower-shops of Paris and London are dyed by putting the stems of white carnations in an aqueous solution of the aniline dye called malachite green. To facilitate the capillary suction of the dye, the stem is slit here and there with a knife. At the end of twelve hours the petals are tinged with green, and a longer immersion deepens the tint. Lilac, narcissus, lilies, and other white flowers, can be tinted in the same way, and different colours may be given by means of different dyes. Eosin, for instance, yields a pretty red, and malachite green turns violet anemones to blue. The process was discovered accidentally by a Parisian florist, and the results are certainly pleasing to the eye; but there is something essentially false in this artificial coloration which cannot be commended.

The Ships of Columbus.

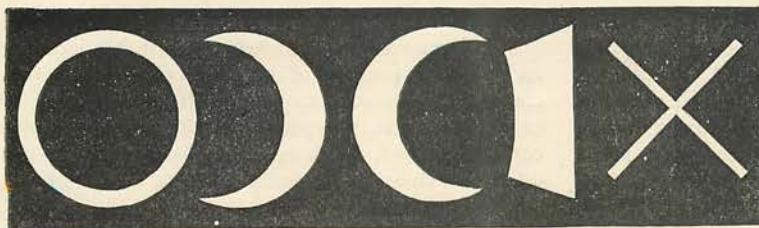
A model of the ship *Santa Maria*, in which Columbus discovered the New World, is being made and will be exhibited, fully manned by Spanish sailors in the fifteenth century costume, at the great Columbian World's Fair next year. The *Santa Maria* was 90 feet in keel decked over all, and with a raised poop 26 feet long. She carried four masts, two square rigged and two with lateen sails. Her consorts, the *Pinta* and *Nina*, were undecked caravels of low draught for going close in shore or into estuaries. Brugada's picture in the Naval Museum of Madrid represents these craft on their arrival at San Salvador or Watling Island (Bahamas), the first land seen in the West Indies, with more or less fidelity. The *Santa Maria* had 50 sailors, the *Pinta* 30, and the *Nina* 24; the entire expedition consisting of 120 souls. It left the seaport of Palos in Andalusia, on the morning of August 3rd, 1492. Three days later the *Pinta* lost

her rudder and put into Teneriffe for repairs. The vessels sailed again on September 6th, and seven days afterwards the variation of the magnetic compass was observed. On the 16th, the ships entered the Sargasso sea of floating weed (*fucus natans*) and two days later birds were seen, but no land appeared; and discontent born of fear broke out amidst the crews. On the 25th, there was a false alarm of land; and on October 7th, as well as 11th, the *Pinta* fished up a cane, a log of wood, and a stick curiously wrought with iron. At 10 p.m. the same night, Columbus is said to have pointed out a light ahead. Next day (Oct. 11th) at 2 o'clock in the morning Rodrigo de Triana, a sailor of the *Nina*, announced the appearance of land; and a few hours later Columbus set foot on shore, dressed in rich robes, and accompanied by the royal banner of Spain, with which he took possession of the new country in the name of their Catholic majesties of Castille and Leon.

A New Speaking-Tube.



The "homacoustic" speaking-tube which we illustrate has several advantages over the ordinary ones. For instance, there is no need to blow into the tube to sound the whistle, W, and one can speak or listen without any change of position, owing to the employment of a flexible ear-piece, E, as well as a fixed mouth-piece, M, after the manner of the telephone. Moreover, it enables the user to speak to any room of a house without the multiplication of mouth-pieces and whistles required by the old-fashioned system. A switch, working automatically, puts the instrument in communication with any of the other tubes throughout the building.



A COURSE INDICATOR.—FIG. 2.

A Course Indicator.

The crescent course indicator which we illustrate is a peculiar form of lamp which indicates the course of a ship with respect to another by certain luminous figures, and is designed to prevent collisions at sea. The indicator is shown in Fig. 1, and consists of a

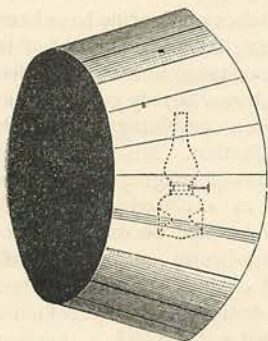


FIG. 1.

bucket-shaped case with an opaque bottom and cover and glass sides, through which the lamp inside is visible. It is placed in a line with the keel of the vessel, and may conveniently be hung on the forestay. When the vessel carrying it is seen end on, the difference in diameter between the dark bottom and cover of the indicator produces a luminous circle as shown in Fig. 2, and when the vessel is seen to port or starboard the two discs form crescents of light as shown next, the horns of the crescent always pointing in the direction the ship is moving. The fourth figure shows that the vessel is abeam and is simply the glass side of the indicator; and the last is a luminous cross-cut in the cover of the indicator, and is only seen when the ship is going astern. A little practice enables the navigator to judge of intermediate courses by the appearance of the figures, and even to estimate the distance of the vessel.

Some Novelties for House and Garden.

In the buildings that are being erected for the Guinness Trust Commissioners a simple but effective sash fastener, invented by Mr. J. A. Piccaver, is being used, and has much to commend it. To the inner sash of the window-frame is screwed a link-plate of brass, which carries a strong link (as of a chain) secured by a powerful staple. To the outer sash of the window-frame is screwed a corresponding plate which must be so fixed that the link on the other plate will just fall over a thumb-bit that is mounted on the plate for the outer sash. This thumb-bit is in section shaped something like a man's thumb, and, when first adjusted, the straight edge (corresponding to the nail-side) is further from the inner sash while the curved edge is inside the link. The pin by which the thumb-bit is pivoted to the plate passes through its oval neck

slightly nearer to the straight edge than to the curved one, so that by the turning of the thumb-bit not only is the curved edge brought outside the link (which is thus fixed) but the sashes are drawn closely together.—That broom-handles, the knobs of table-drawers and cupboard doors, hat-pegs, and other household fixtures have a bad habit of

coming unfixed is an unfortunate fact which no housewife would dispute. A new "grip" to prevent this has just been patented, and is worth consideration at the hands of all sufferers by such accidents. The grip is a metal plate which is to be nailed or screwed over the hole for the handle, knob, or peg, which has simply to be inserted at the opening in the plate and turned to the right two or three times. This turning brings into action a projecting point on the inner rim of the plate which practically cuts a screw-thread in the bottom of the handle, or whatever is being inserted. Of course if the grip is used on a broom or brush it may be transferred to a new one when the brush-head is worn out.—Garden shreds, ready cut for the nailing up of plants and creepers, and medicated to ward off insects such as are fond of depositing their eggs on the slips ordinarily used, are now to be procured. They are made in every size likely to be required and in suitable colours.

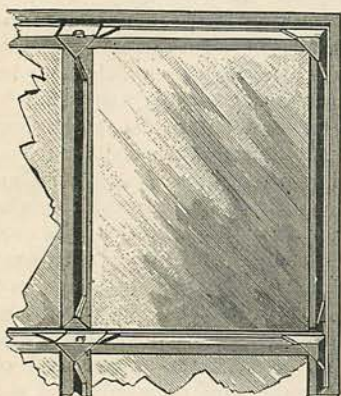
A Gold-Finder.

Alluvial gold diggings, that is to say, those in which the gold is found in detached lumps or nuggets under the soil, are most remunerative to the individual prospector who has not the wherewithal to embark in



quartz-crushing. To enable the prospector to discover gold at a depth below the surface the electric probe which we illustrate has been introduced. It consists of a steel boring tube having inside a metal rod connected to a battery and electric bell carried by the prospector. Should the point of the probe strike against a piece of gold the electric circuit is established and the bell rings. A sample of the soil thus found to be auriferous can be obtained by advancing the outer tube into the ground beyond the inner core.

A Steel Window Frame.



Our engraving represents part of a new window frame of pressed steel which has been introduced by a Birmingham firm. The glass is held in clips by its edges, and putty is not required. The frames are lighter and stronger than those of cast-iron; they can be packed

in a small space, and are practically undamaged by railway transport. The frames are particularly applicable to corrugated iron buildings, but they can be built into brickwork, and their appearance can be made artistic.

The Latest Calculating Boy.

M. Inaudi, the young man whose feats of mental computation recently astonished the members of the French Academy of Sciences, possesses the gift of what may be called double action of the brain. He can perform his calculations while speaking or listening to others, as though there was a calculating machine inside his head. At the *séance* in question he was asked to subtract the following numbers, which were simply called out to him :—

4,123,547,238,445,523,831
1,248,126,138,234,129,910

and while talking to those around him he gave the answer correctly. Requested to multiply 452 by 538, he did so at once; and he gave the number whose cube added to its square made 3,600, almost immediately. He was told to square the number 4,801, cut away a figure, divide the difference by 6, and give the square root of the result; and while explaining to the meeting how he performed the above subtraction he suddenly said "I have found the answer," and gave it correctly. Inaudi was born at Onorato in Piedmont in 1867, and is entirely self-taught. His methods of computing are peculiar to himself, and he can solve questions in his head which ordinarily require the use of algebra. He is regarded as a prodigy, and is being examined by a Commission of the Academy.

Soda from Salt.

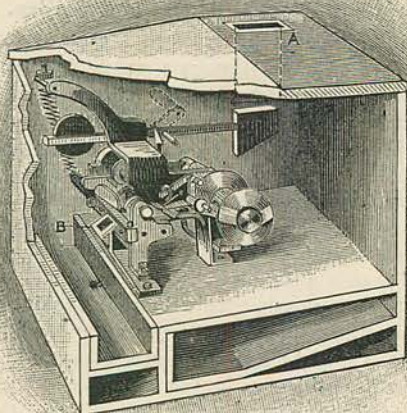
Mr. Greenwood, an English chemist, has invented an electrical process of making caustic soda from common salt—that is to say, chloride of sodium. A current of electricity is passed through a series of tanks containing brine, which is decomposed with the production of chlorine and sodium. By a further process the sodium is converted into caustic soda. Mr. W. H. Preece, the eminent electrician, has examined the process at work, and finds that the cost of breaking up a ton of salt in this manner is £3 7s.; and if water-power is used to generate the current, it can be brought as low as £1 14s. Caustic soda made by the ordinary chemical method sells at £12 a ton; so that, since a ton of salt costs 10s., the caustic soda made by the new process can be sold at one-third the price of the other.

Pure Boron.

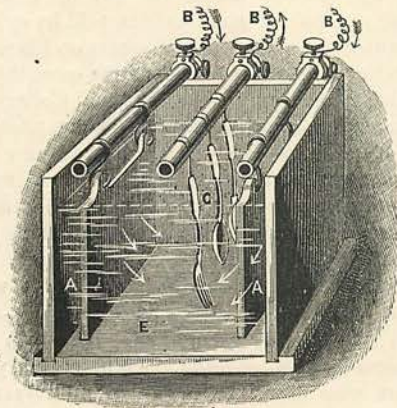
M. Moissan, whose researches on fluorine have been described in the GATHERER, has now succeeded in isolating pure boron. The substance hitherto regarded as amorphous boron is, he shows, largely composed of impurities formed by the boron combining with metals used in the process of production. His new method consists in heating 70 grams of magnesium and 210 grams of boric anhydride in a closed crucible. A violent reaction ensues, the crucible becoming white-hot. On cooling, a reddish-brown mass is found, which on being ground, and washed with water, then with hydrochloric acid, alcoholic potash, hydrofluoric acid, and lastly with distilled water, yields a chestnut powder, consisting of 95 per cent. of boron. Further treatment eliminates the remaining impurities, except a negligible trace.

A Postage Stamp Seller.

Machines for selling postage stamps automatically are likely to come into use before long, and will prove a public convenience. One has been tried and with success by a private advertising company; but what is really wanted is that the Post Office should take the matter up, as one of public importance, and



affix the machines to pillar boxes or the outside of post offices. Already there are two machines which deliver the stamp, unaccompanied by any advertisements or other things. One of these is illustrated in the figure, where A is the slot into which the coin is dropped, and B is the stamp delivered to the purchaser by opening the drawer into which it falls. The other machine has an advantage over this in presenting the stamp to the purchaser through a slot, so that he has only to tear it off by the perforations in the ordinary way. The penny goes in at one slot and the stamp comes out at another. Only one stamp can be obtained at a time as a set of teeth fall into the perforations and hold the next one back unless another coin is dropped into the slot. It is to be hoped that some public-spirited member of Parliament will call the attention of the Postmaster-General to the public service which might be rendered by such machines in the hands of the Post Office.



“Arcas” Silver-Plating.

Silver-plating is apt to tarnish owing to the sulphur in the atmosphere, and to require frequent polishing. Nickel-plating again is attacked by vegetable acids, and is, moreover, liable to crack and peel off. These drawbacks are overcome in the “Arcas” plating by the use of an alloy, whose composition is not disclosed, but which resembles silver, but is more easily cleaned by simply washing the article and rubbing it with dry leather. The hardness of the coating is between that of nickel and pure silver. Iron, steel, German silver, brass, and so on, can be electro-plated with Arcas silver, so that there is a wide field for the application of the process. The figure shows the bath adopted for plating spoons. It consists of a tank of slate containing a chemical solution of the Arcas alloy. Three metal bars, B, B, B, are connected to the dynamo or source of the electrical current. From the two outside bars plates of Arcas alloy, A, A, are suspended in the bath, and from the middle bar the spoons, C, are similarly hung in the solution. The current passes from the “anodes,” A, A, to the “cathode,” C, that is to say, the spoons, and decomposing the solution in its passage deposits the Arcas metal on the surface of the spoons. Various methods are employed for cleaning the surfaces of the articles

to be coated, and after the coating has been given they are properly burnished. The Arcas process is now on view at the Crystal Palace Electrical Exhibition.

The Lung Fish of Queensland.

At the recent meeting of the Australasian Association for the Advancement of Science, held in Hobart Town, Tasmania, Professor W. B. Spencer, of the Melbourne University, read an interesting paper on the Ceratodus, or Lung Fish, which inhabits the Burnett and Mary rivers of Queensland. In this curious animal the swimming bladder has been so modified as to serve for a lung and enable it to breathe the air at will. The Protopterus of Africa is allied to it, and during the dry season it covers itself with mud and lives by means of its lung; but the Ceratodus does not appear to forsake the water. It rises to the surface, and breathes the air with a kind of spouting noise. The lung is very useful to it during the wet season, when the rivers are flooded and the water charged with mud and sand. The Ceratodus is herbivorous, and lives on the seeds of gum-trees which fall into the water.

A Mountain of Silicates.

It is reported from Quebec that a mountain of silicates, capable of being used in manufacturing glass, has been discovered at Kamouraska, in Lower Canada. The Provincial Engineer states that the rock, which is vitrifiable, contains 98 per cent. of pure silica.

A Japanese Harmonium.

Dr. Shohei Tanaka, a graduate of Tokio and Berlin Universities, has been awarded a premium of 1,000 dollars by the Japanese Government for his invention of a new harmonium of pure intonation. It is a keyed instrument, similar to a piano, but having a black note between E and F, and the other black notes divided into two or even three. There are twenty distinct notes in the compass of an octave, instead of twelve as in our instruments of equal temperament. The white notes are tuned to the perfect major scale of C, the E being therefore flatter than the E of the piano. Hence, if it is desired to play on the scale of D, this E, the true major third to C, must not be used. There are other points of difference which need not be detailed.

History in Parallel Columns.

A little work by Mr. R. W. Western, under the title of “Graphic Chronology,” has just been published by Mr. Fisher Unwin. Each page deals approximately with a quarter of a century, and shows in a glance who were the men and women of note in that period, at home and abroad, and in every walk of life. The idea is a good one, and is carried out in a way that provides a handy companion to the busy reader.

Sixteenth-Century Writers.

In the eighth volume of his “English Writers” (which has just been published by Messrs. Cassell) Professor Henry Morley brings his story of English Literature down to the year 1579, from the beginning of the 16th century. Spenser and Shakespeare he leaves

for fuller consideration in later volumes, but otherwise he deals comprehensively with the 16th century writers. Few but students know what a valuable and formative influence the writers of this period had on our language and literature. Professor Morley says, in his last leaves to this volume, that it has been the main purpose of his work "to set forth the literature of our country as part of its life, with constant indication of the relation of thought to action, that is to say, of literature to history." The scheme is so good, and Professor Morley so capable a guide, that we hope many of our readers will follow him in this study.

"Phases of Animal Life."

This is the title which Mr. R. Lydekker, B.A., gives to a volume of essays which have previously been published in serial form, and are now collected and issued by Messrs. Longmans. This is hardly a book we should put into the hands of a veritable tyro in natural history, but, on the other hand, it is not so far advanced as to be unintelligible to anyone but an expert. There is certainly a fund of information in it, well put together, and admirably classified.

A Parcels Post Register.

"The Simplex" is a new Parcels Post register, which Messrs. A. Heywood & Son have just issued for use in business houses, and it seems admirably adapted to answer the purpose. It provides spaces for the entry of the date and place of posting, the name and address of the person to whom the parcel is addressed, the weight, the amount of postage, the postmaster's signature, and the office stamp, which practically covers the requirements of such a book.

For School Use.

We are glad to see that Messrs. Longmans have issued in a very cheap and handy form a school edition of Mr. Andrew Lang's charming collection of verse under the title of "The Blue Poetry Book." No better collection could be put in the hands of children, or one more calculated to give them a genuine love for poetry.

Practical Handbooks.

Our readers will remember that some time ago we published a paper on "Bent-Iron Work." Those who desire fuller instruction and guidance than it is possible to give within the space of a magazine article will find them in a very useful and practical "Manual of Instruction for Amateurs in Bent-Iron Work," issued by Mr. L. Upcott Gill. The author is Mr. F. J. Erskine, and his book is well and valuably illustrated.—The second practical work that we wish to speak of is one on the very different subject of "Pigeons," published by Mrs. Alexander Comyns, and written by the Rev. W. F. Lumley, who has succeeded in compressing within very small compass a mass of valuable hints and directions for the housing, management, and rearing of these popular pets.—Another useful handbook is "New-Laid Eggs" (Longmans & Co.), a work of hints for amateur poultry rearers written by Mrs. De

Salis, who is well-known as a writer on cookery. We need say no more than that Mrs. De Salis is as practical in her every direction under this head as she has always shown herself when writing on matters culinary.—At the request of the National Health Society, who had been called upon by several County Councils to supply teachers of cottage cookery, Miss Mary Harrison has written "Cookery for Busy Lives and Small Incomes," which has just been published by Messrs. Longmans & Co. But there are many housewives who would find the hints given in Miss Harrison's work extremely useful, although they are not, perhaps, among those for whom the recipes were originally put together.

A Photographer's Recollections.

In the practice of his profession Mr. Vernon Heath has been brought into contact with a large number of well-known people, and his "Recollections" (just published by Messrs. Cassell & Co. in a handsome volume) are full of good stories told by or of them. He opens with two or three chapters on his uncle, Mr. Robert Vernon, to whom the nation owes the Vernon collection of pictures in the National Gallery. Then he goes on to tell how he came to take up photography, which at that time (50 years ago) was quite in its infancy, as the following story shows:—"I chiefly worked in the grounds at and about Ardington, photographing the house, the lake, the church, and anything that was sufficiently artistic in effect for my purpose. One day I essayed to take my uncle's portrait. It was to be done out-of-doors, he sitting in his garden-chair. I warned him that he would have to remain still and motionless for *eight minutes*. Think of this, ye photographers who now take negatives in a fraction of a second!" Another good photographic story is that which Mr. Vernon Heath tells of his portrait of the late Duke of Clarence. "Soon after the birth of the Prince, my mind reverted to the negative which, during the previous summer, I had taken of the Princess, when she came to my studio, for the purpose of Mr. Frith's picture; and taking it, and the one of Mrs. Noble's cot, I so combined them on a print that the Princess was represented standing by the cot, looking down at the child in it. The illusion was perfect, though I desired to accomplish something more. On the day, therefore, of the christening of the Prince Albert Victor, I took, with some hesitation, one of these combined prints to Marlborough House, and had an opportunity of submitting it to the Prince of Wales, who was gracious enough to speak of it in flattering terms. This gave me my cue, and for the sake of making the photograph, I asked His Royal Highness whether, at some convenient opportunity, I might have the privilege of introducing his own child into the cot in lieu of the one then there. The Prince, smiling, said: 'Better leave it as it is; why, at that age, one child is so like another that there can be no necessity for the change.' Nevertheless, I held to my project." But the book is full of good tales, and we can only advise our readers to go to the volume for themselves, and they will be amply repaid.