

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.

A Paper Flower-Vase.



scalloped edge is gilt, and the outside is painted with a floral design.

Burmite.

The amber of Upper Burma is, according to Dr. Noetling, a new variety of the fossil gum which has received the name of Burmite. It is fluorescent, and like solidified kerosene oil. Of darker colour than most ambers (succinite), it is also harder; in fact, some of it properly cut and mounted resembles the ruby in appearance. The jade, or rather jadeite, of Burma is in general white, but green and red varieties are also found. The stone is worked in pits along the Uru river, south of Sankha, and in quarries on the plateau of Tammaw, eight miles from Sankha.

Is Stature Changing?

At the Eglinton Tournament it was remarked that the old armour had to be let out in many instances to fit the modern champions, and there are people who contend that men are growing taller and burlier instead of shorter and punier, which is the general notion. Dr. J. Rahon, an anthropologist, has by patient investigation arrived at certain conclusions as far as France is concerned. The earliest quaternary skeletons of Western Europe show an average height of 1'63 metres for the males. The Gauls, Franks, and Burgundians from the north ran the figure up to 1'66 metres, but since this proto-historic period the figure has slowly declined to 1'62 metres in France. The females

average about ten centimetres (2 inches) less in height than the males at all times. In the ancient days the bones of both were heavier and stronger than now. The proportions of the body have been the same from the most remote times.

The Earth's Age.

Mr. Clarence King, the well-known American geologist and explorer, has advanced Lord Kelvin's method of determining the age of the earth, by considering the effect of heat and pressure on certain rocks, especially diabase, whose specific gravity is approximately equal to that of the earth's crust. His conclusion is that the earth's age as a planet is 24 million years. This agrees with the general conclusions of Lord Kelvin, who only gave upper and lower limits: and it is quite discordant with the demands of geologists, which may best be described as "vaguely vast."

A Pneumatic Wood-Carver.

The pneumatic machine for carving wood which we illustrate consists of a table on a light steel frame, carrying the tool or carver and a pencil or tracer. The design or pattern is fixed on the table, along with the piece of wood to be carved to it, and while the operator traces the design with the tracer on the pattern, the cutting-tool carves it in the wood. A bellows, or air reservoir, to work the motor and carving tool, is



placed under the table as shown. The machine is compact and requires no skilled attention.

Cotton-Seed Soap.

A soap made entirely from cotton-seed oil has been brought out, and is recommended for laundry work.

The soap contains very little free alkali and glycerine, and 75 per cent. of true soap. It is not only a good cleanser, whether used by hand or machinery, but it does not injure the colour of dyed fabrics.

A Screw Colander.

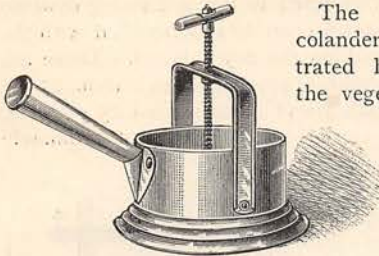
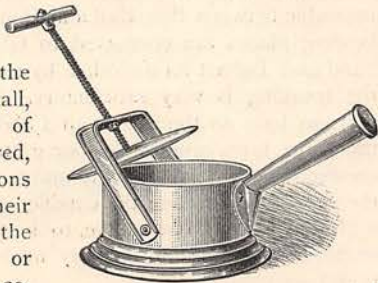


FIG. 1.

The "Westminster" colander, which is illustrated herewith, presses the vegetables by means of a screw action, and not by leverage or direct pressure. The screw, as will be seen, works through the bail of the colander, and the pressure can be applied gradually with little exertion. The colander is also useful in making beef-tea, jellies, or lemonade.

The Samoans.

Owing to the recent tales of Mr. Robert Louis Stevenson and the political crisis in the island, Samoa is now attracting general attention, and some particulars of the interesting islanders, who are sometimes called the Greeks of the Pacific, will not be out of place. According to a French anthropologist, the natives are of Polynesian stock, and the most beautiful specimens of the race. They are tall, brownish-yellow of skin, black-haired, of good proportions and features. Their heads approach the brachycephalic or broad type, the cephalic index being 81.8, which is a good deal broader than the British type. In temper they are gay, good-humoured, and easy-going, but their old idyllic life, which reminds us of the Homeric age, is threatened with extinction owing to the white traders and the importation of Melanesian labourers from other islands, a smaller, darker, longer-headed race. The Samoans are Christians, and have the European calendar, as well as two houses of parliament. The climate is very equable, seldom rising above 93° Fah., or falling below 79° Fah. February is the hottest and July or August the coldest month. The rainy season from December to April is also the windiest, and seldom passes without a hurricane.



A SCREW COLANDER.—FIG. 2.

A New Nutmeg-Grater.

The nutmeg-grater which we illustrate is very convenient, and does not graze the fingers, while the nutmeg is grated to a mere shell. As will be seen, the



A NEW NUTMEG-GRATER.

nutmeg is placed in a carrier under a disc or piston. The grater is held in the left hand, and the carrier moved forward and backward along the grater, with an occasional movement from side to side to prevent clogging of the spice.

The European Races.

It has been shown by anthropologists that what we call nationality is practically independent of race, inasmuch as all the people of Europe, for example, are descended from four primitive races, with what a chemist would call "traces" of others. It is true that each nation is a somewhat different blend from the others, but the same elements are common to all. The fact must tend to destroy a pernicious Chauvinism and exclusiveness which has been founded on isolation, ignorance, and national vanity. What, then, are the four races which, by their union, have peopled Europe? Two of them are long-headed or dolichocephalic, and the other two are broad-headed or brachycephalic. In scientific language these are the Dolichocephalic Leptoprosopes and Chamæprosopes, and the Brachycephalic Leptoprosopes and Chamæprosopes. In plain English there is a tall, long-headed, long-faced race and a short, long-headed, broad-faced race, a tall, broad-headed, long-faced race and a short, broad-headed, broad-faced race. By the union of these, British, Irish, French, Germans, Italians, Spaniards, and other European nations have in the main been formed, and the only broad distinctions are that in the northern countries of Europe the blonde elements are more prominent than the brunettes, which are dominant in the southern countries, and that in the middle of Europe, from the Urals to Portugal, the broad-headed elements preponderate. In the United Kingdom the long, or dolichocephalic, type of head is quite general, although the broad, or brachycephalic, also exists. The blonde and brunette complexions are perhaps equal in number, and it may be roundly said that as a people we are derived chiefly from the long-headed blondes and brunettes. This view of the European races is, of course, at variance with the old hypothesis of successive immigrations of "Aryans" from Asia, so eloquently advocated by Professor Max Müller, and hastily adopted into politics,

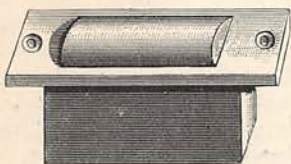
literature, and art. The primitive Aryan, with his long train of waggons and all his household, emigrating towards the setting sun is becoming a mere myth of the scientific imagination. Further, it is a curious homily on the long antagonism which has existed between the so-called "Celtic" and "Teutonic" inhabitants of these islands to find that according to science there is no radical difference between them. The Irish, for example, consist mainly of the tall, blonde, long-headed type and the short, brunette, long-headed type—in fact, the two types of which the English chiefly consist. The same may be said of the Welsh and the English. As for the Scotch Highlanders and the Lowland Scotch, the difference is one of language and habits rather than of race; and it is much the same with the people of Ulster and the rest of Ireland.

A Remedy for Bookworms.

An American naturalist, Mr. Samuel Garman, has been studying the bookworms of America, and his observations may be useful to librarians. A common pest is the *Lepisma saccharina* or "silver fish," a tiny, active, silvery creature, so fond of paste and sizing as to riddle whole pages. The "buffalo" or "carpet" bug, really a small beetle (*Anthrenus varius*), and the *Blatta Australasiae*, a voracious cockroach, also play havoc with books; and in the West Indies there is a "drummer" cockroach (*Blatta gigantea*) who not only attacks books but their authors. Mr. Garman recommends pyrethrum powder for keeping away cockroaches and the silver fish. Bisulphide of carbon evaporated in closed boxes or cases exterminates the buffalo bug, and there is a composition containing phosphorus, called the "Infallible water bug and roach exterminator," made by a firm in Boston, which he impartially recommends.

A Rubber Door-Catch.

In this door-catch vulcanised rubber is employed instead of steel. The catch is an inch long, and in the form of a roller mounted on bearings, which by means of springs have a certain amount of horizontal play. The advantages claimed for it are greater elasticity, durability, and comparative noiselessness. The door shuts easily and is held secure.

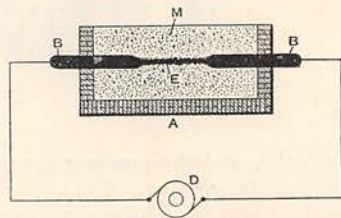


A Steam Man.

Professor George Moore, an American inventor, has devised a mechanical man actuated by steam, which is described and illustrated in an American scientific journal. The figure is six feet high, and made of steel in likeness of a mediæval knight in armour, with the top of the funnel concealed by the plumes of his helmet, and an escape pipe from his visor resembling a cigar. The trunk of the body contains the furnace, boiler, and engine, the limbs the mechanism for walking. The figure is intended to pull a cart, and walks briskly at a pace of five miles an hour.

Carborundum.

It is claimed for this new material that it can be used to polish glass and even diamonds. It is a compound of silicon and carbon, with traces of alumina, lime, magnesia, and oxygen, fused together in an electric furnace, which is shown in the wood-cut, where *BB* are carbon rods connected to the generating dynamo *D*, and *A* is a fire-brick crucible or case filled with the materials *M*, for making the new mineral. These are 50 per cent., by weight, of pine gas-coke carbon, 25 per cent. of silica or silicate of alumina, and 25 per cent. of salt. The materials are ground and intimately mixed, and as they are of high resistance to the current, the arc is started by a train of conducting graphite between the carbon points. The intense heat of the arc fuses them into a mass of crystallised carborundum, which forms about the arc. This mass is cooled, washed, and crushed, and the crystals of carborundum are assorted for use.



The Scoto-Irish Telephone.

Ireland and Scotland are now able to converse by telephone, as the Post Office have submerged a speaking cable between Port Kail and Donaghadee. These landing places are connected to Glasgow on the one hand and Belfast on the other by overland lines, and the speaking is very satisfactory. The cable is not quite so long as the Dover to Calais one, but is of the same type, containing four gutta-percha covered conductors sheathed in hemp and iron wires. Under the sheathing, however, the conductors are wound with a close spiral of brass tape, to keep out the teredo worm, which has unfortunately made its appearance round our coasts.

Luminous Colours.

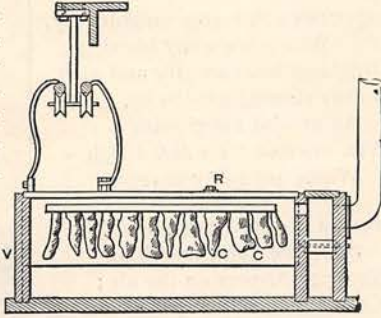
Herr Jacksh, of Triesch in Moravia, has been investigating the properties of self-luminous minerals with a view of preparing luminous pigments. The sulphides of calcium, strontium, barium, and zinc are all phosphorescent after exposure for a time to light. It is best, however, to prepare the sulphide of zinc by distillation in a vacuum. The barium salt yields an orange phosphorescence, the strontium and zinc sulphides a greenish light. When pure, sulphide of calcium gives a yellowish light, and a violet one after being raised to a red heat and mixed with a salt of bismuth. Thus prepared it keeps its luminosity for about forty hours after an exposure of several seconds. The pigments can be fixed on paper by means of a liquid made by dissolving 8,000 grains of pure white gelatine in half a gallon of warm water, and adding 800 grains of glycerine to three pounds of the solution. When the luminous colour has to be exposed to the open air,

it should be mixed with an equal quantity of shellac, and the painted surface varnished with shellac after it is dry.

Caustic by Electricity.

Caustic and bleaching powder are now made by electricity at Snodland in Kent. The electric current, having an electromotive force of 80 volts, is obtained from a dynamo driven by a 50 horse-power engine. It is sent through a series of vats, one of which is shown in section in the figure. The sides of the vat, V, are made of slate, and filled with salt water.

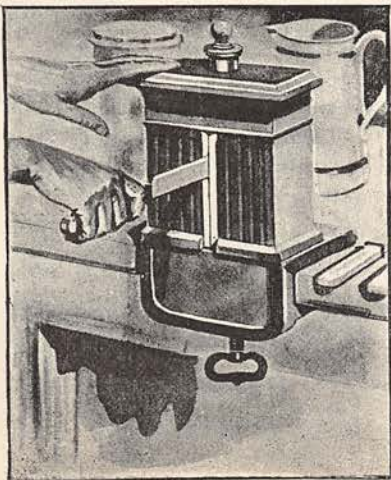
The anode, by which the current is conducted to the water, is formed of pieces of gas coke, C C, attached by a lead backing to the metal rod, R, to



which the current is connected. The cathode, by which the current leaves the salt water, is of the ordinary kind. In passing through the liquid the electricity breaks up the salt or chloride of sodium into chlorine and caustic soda. The caustic soda liquor is drawn off and evaporated into dry caustic, which is preserved for sale, and dry salt, which is used over again. The chlorine is conducted to milk of lime agitators, where it forms chloride of lime or bleaching liquor; or to an ordinary bleach chamber, where it forms bleaching powder by combining with lime. The electric process is likely to become of general use in many different countries.

A New Knife-Cleaner.

Our engraving represents a new knife-cleaner, which is easy to use and very satisfactory. It is clamped to a table and polishing powder supplied to it by



removing the wooden plug on the top. The knife is then inserted, edge upward, between the two leather strips as shown, and moved gently backwards and forwards as it is pressed downwards to the bottom.

Home-Made Ice Creams.

There is something peculiarly cooling and refreshing in this title. And it is claimed for the "Imperial" Ice-cream Freezer, which has just secured provisional protection, that it makes home-made ices quite possible. The freezer consists of a couple of tin cylinders, one enclosed in the other, and turning readily on a central axis. The inner cylinder is filled with the mixture to be frozen, its air-tight lid is securely closed, and the whole is put into its place within the larger cylinder. The space between the two is then filled up with a mixture of one part of common salt to three parts of broken ice, and the lid is secured. The handle on which the machine is revolved is then fixed, and the cylinders are turned slowly—five minutes sufficing for a pint, and ten for a quart of cream. Wherever ice and the prepared powders can be got there ought now to be no difficulty about home-made ices, thanks to this inexpensive machine.

An Artist's Carrier.

The "Eclipse" is the name of a new and very handy "carrier" for wet canvases which seems to meet a want long felt by artists and art students. It is very simple, consisting only of two metal plates, one of which is surmounted by a leather handle, and both of which are provided with projecting staples which serve to separate the canvases, which are supported by two long bands of webbing, in the manner of the ordinary rug-strap.

Prize Competitions.

In the Four-Part Story Competition the manuscripts have all been before the judges, and the award will be published in our August number. In the Ballad Competition and the Music Competition the entries are already closed as we go to press, and before this number is issued the Photographic Landscape Competition will also be closed. In all these cases the awards will be made as quickly as possible.

Intending competitors in the Short Story Competition are reminded that July 3rd is the latest date for receiving entries.

"The Crown of the Year."

The Extra Summer Number of CASSELL'S MAGAZINE under this title is now ready at all booksellers' and bookstalls. It contains a complete holiday novel, "Hard to Please," by Frances Haswell, several shorter contributions, and a "New Season's Fashion-Budget," specially written for this number by a lady correspondent, and copiously illustrated by photographs from life by Vere Brodie.