

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.

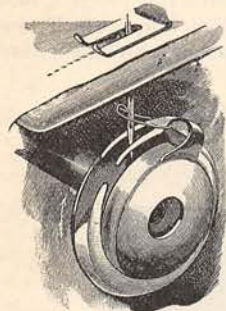
The Chainstitch Looper.

FIG. 1.

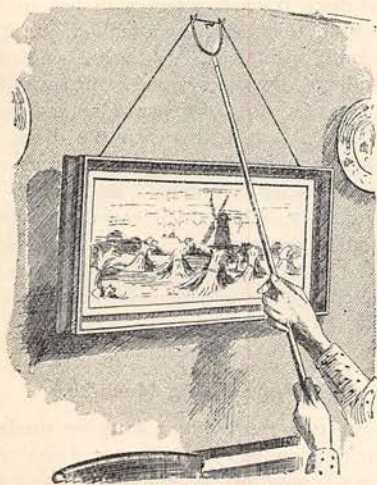
A well-known firm has lately introduced a new and ingenious "chainstitch looper" for doing chainstitch work on their lockstitch sewing machine. It is very simple, as illustrated in Fig. 2, and can be a family machine, thus enabling it to do the work of an "embroiderer" as well. The change can be made in a moment by the sempstress, and consists in substituting the "looper" for the ordinary case with a bobbin inside. The larger illustration (Fig. 1) represents a sewing machine with the looper in its place.



FIG. 2.

A New Picture Hanger.

Our engraving shows a light metal fork, similar to a hay fork, which has been brought out for hanging pic-



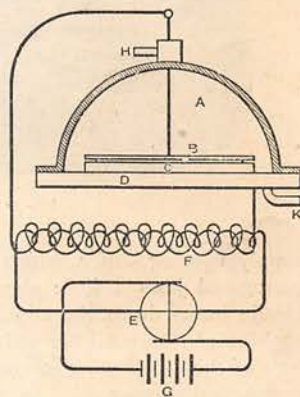
A NEW PICTURE HANGER.

tures in a symmetrical and convenient manner. It enables high pictures to be hung or adjusted to a nicety without trouble by an unskilled person.

Copying Coins by Electricity.

At a recent conversazione of the Royal Society the Rev. F. J. Smith exhibited a new process for copying

coins, which bids fair to have a useful application. The coin or medal forms one plate or metal foil of a condenser, the other foil being an ordinary copper sheet or plate. A dry photographic plate, or simply a bromide paper, is sandwiched between them, and the foils being connected to the poles of an induction coil, the electrification of the foils for even a fraction of a second affects the photographic plate so as to imprint an image of the coin or medal in it, which is developed in the ordinary way. The best results are obtained by conducting the operation in an atmosphere of oxygen gas under a pressure of two atmospheres in a bell jar.



The figure shows the arrangement of the apparatus, where A is the bell jar; B, C, D, the coin, dry plate, and copper plate; E, F, and G the commutator, induction coil, or transformer, and the battery; H and K the inlet and outlet for the oxygen gas. The explanation of this novel process, which is called the "inducto-script," and originated in the "breath figures" of Möser, Riess, and Karsten, is that the electric charges cause a bombardment of metal particles on the photographic plate and a resulting chemical action. The principle is therefore somewhat like that of Bain's chemical telegraph, in which metal particles from the style mark the chemical paper passing under its point.

The Scotographoscope.

This invention is designed to enable lecturers to demonstrate with chalks in a darkened room. It consists of a box with a lamp inside, and one end is made of a ground glass on which the ordinary chalks will mark. The light behind it makes the chalk lines quite visible. The device is due to Mr. Carus-Wilson, and will be useful to travelling lecturers.

The Tallest Tree.

The highest tree in the world, so far as has been ascertained, is an Australian gum tree of the species *Eucalyptus regnans*, which stands in the Cape Otway Range. It is no less than 415 feet high. Gum trees grow very fast. There is one in Florida which shot

up forty feet in four years, and another in Guatemala which grew 120 feet in twelve years. This corresponds to a rise of ten feet in a year, or nearly a foot per month.

A New Candle Grip.

The little device which we illustrate is useful for holding a candle in the candlestick whatever its size, from about an inch in diameter to a mere taper. It is

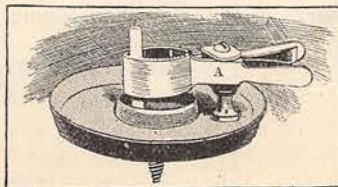


FIG. 1.

simply a spring clip, A, which holds the candle in its corrugated jaws a little above the socket. As the candle burns down, the clip closes on the wick and enables it to burn till the melted tallow in the socket-well of the candlestick is consumed in a cleanly and economical manner.

A Curious Glow.

At a recent meeting of the Physical Society of London, Mr. E. C. Rimington showed a novel experiment, which has attracted much attention in electrical circles. It is well known that beautiful glows are produced in tubes of rarefied air and other gases when the electrical discharge from an induction coil is sent through them, and Messrs. J. J. Thompson, Tesla, and others, have excited glows in such tubes without sending a discharge through them, but simply by placing them in the electrified field or space between the poles of an electric machine giving a discharge rapidly, varying in direction, and of high "potential" or "pressure." Mr. Rimington finds that he can elicit a glow in a small vacuum tube by simply twirling it between his finger and thumb close to a rod of glass or ebonite electrified by rubbing it with flannel. The light takes the form of a double fan, and in some of the experiments of a ring. The tube is merely a piece of straight glass tubing 5 inches long, with a bore similar to that of a spirit thermometer, and a bulb at each end. A T-piece or projection allows it to be exhausted



A NEW CANDLE GRIP.—FIG. 2.

by an air pump and then sealed, besides forming a pivot on which to turn it. The experiment may be regarded as showing the direct transformations of mechanical energy into light.

A New Influence Machine.

Mr. James Wimshurst, the well-known inventor of the "influence machine" for generating statical electricity by induction in much larger quantities than the old frictional machines of the same size produce, has recently brought out a modified form which we illustrate herewith. The new machine consists of two

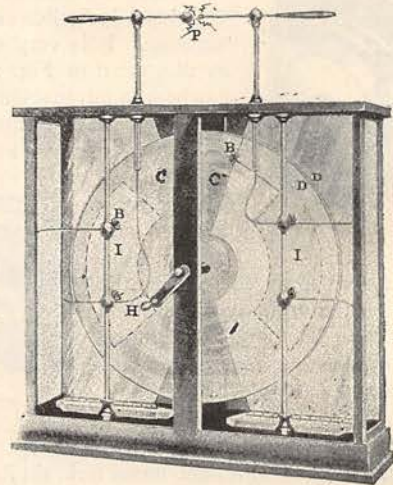


plate-glass discs, D, each 3 feet 5 inches in diameter and $\frac{1}{4}$ inch in thickness, mounted on one boss and spindle about $\frac{3}{8}$ inch apart. When the spindle is turned by the handle, H, the discs rotate in the same direction, and by means of a series of paper inductors mounted on crescents of glass, C, C, between the discs, and fine wire brushes, B, B, for collecting the charges, a copious supply of electricity is obtained, and led to the discharging points, P. The principle of the machine is too complicated to explain here, and is moreover still a subject of dispute. With small Leyden jars to accumulate the charge the machine gives electric sparks of 3 to 5 inches in length.

A New Flying Machine.

Our illustration represents a working model of the flying machine on which Professor Langley, of the Smithsonian Institution, Washington, is now engaged. It is intended to carry passengers, and bears some resemblance to a dragon-fly or, better still, a flying fish. The body is shaped like a mackerel, and the backbone is a tube of "title metal," or aluminium-steel. It is 15 feet long and 2 inches in diameter. Ribs of aluminium and steel are employed to give the framework sufficient rigidity. The engines are located in the head of the fish, and are of the double oscillating type. They weigh 60 oz. in the model, and develop one

horse-power. The boilers, four in number, are of hammered copper, and weigh 7 lbs. each. They occupy the middle of the fish, and instead of water they are fed with a volatile hydrocarbon, which vaporises at a low temperature. The fuel burnt is refined gasoline, which is stored in a tank, holding a quart, at the tail of the fish. Before it enters the furnace the gasoline is vaporised by passing through a heated coil of piping. The propeller consists of twin screws capable of being adjusted at different angles to allow of steering. The body of the fish is isolated with asbestos to prevent loss of heat. The wings, or aeroplanes, consist of aluminium-steel frames covered with China silk.

The pair in front are 42 inches wide, and 40 feet from tip to tip. They can be adjusted at different angles. A cross-piece, or tubular mast, runs through the body of the fish, like a truss, and stays of aluminium wire tie the whole apparatus together. A good deal of secrecy has been preserved by the constructors for obvious reasons, but sufficient is known to make the result of the experiment a matter of great interest in scientific circles.

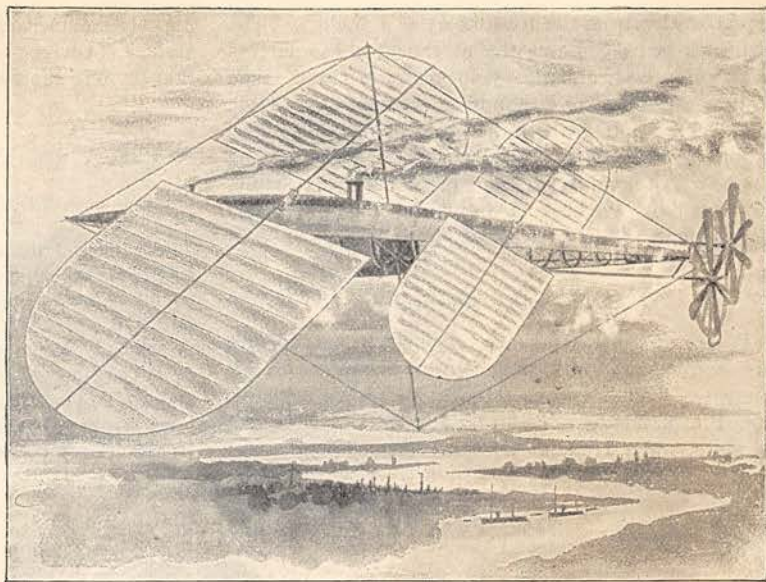
A Life-Saving Pillow.

The ordinary berth pillow, or bolster, has been arranged as a life-belt, and the device is now adopted on the Cunard steamers *Campania* and *Lucania*, as well as other vessels. Our illustration shows the double pillow and the mode of attaching it to the

person. Each half is a series of air chambers covered with stuffing of hair or feathers, to make a soft head-rest, and the buoyancy of the belt is fully three times that required by the Board of Trade. As the belt is easily put on and always at hand, it is calculated to inspire confidence in the passengers.



A LIFE-SAVING PILLOW.—FIG. 1.



A NEW FLYING MACHINE.

Magnetic Pulleys.

Mr. Edison has applied magnetic attraction to augment the adhesion between a belt running on a pulley and thus prevent the belt from slipping. The neck or gorge of the pulley is made of iron and magnetised by the electric current, while the belt is rendered capable of being attracted by pieces of soft iron attached to it. As the slipping of belts on pulleys is very wasteful of the power transmitted by the belt, the new device is likely to have a future in industrial machinery. We may add that a French ship-builder is now making a tow barge in which the tow chain is attracted to the drums or pulleys over which it passes by magnetism in order to increase the friction of the chain. The method is similar to that of Edison, the gorge of the drum being magnetised by electricity.



A LIFE-SAVING PILLOW.—FIG. 2.

Cardine.

According to the principle of medicine followed by the Brown-Séquard School, every organ of the body takes from the blood the nutriment it requires and that only. If the blood is unable to supply it, the organ languishes, and hence the new treatment by communicating to the blood through the skin or stomach those elements it requires to feed a weak or diseased organ. Thus in the case of weak or failing heart a new remedy has been applied by Dr. Hamilton, of New York. It is called "Cardine," and is

a preparation from the fresh heart of a bullock. The bullock's heart contains the nutriment it has derived from the blood, and this being extracted and taken in proper doses (5 or 6 minims in the case of cardine), supplies the nutriment to the blood of patients suffering from weak heart. The results in strengthening the hearts of invalids are said to be very remarkable. Perhaps bullock's heart as an article of diet may also be beneficial on the same principle.

A Submerged Atmosphere.

Water at great depths is very highly charged with air, because the absorbing power of water for air increases with pressure. Hence Mr. A. G. Richardson, F.C.S., has calculated that at depths of 1,380 feet or more, water contains its own volume, or more, of

air. Remembering that three-fourths of the earth's surface is covered with water, we are led to conclude that there is another atmosphere below the real one.

"A DAY IN THE LIFE OF A CABINET MINISTER."

A CORRECTION.

THE author of the above paper, which appeared in our July issue, writes as follows:—

"I regret exceedingly that, owing to misinformation, I stated that Mr. H. H. Fowler had been in the habit of preaching in Wesleyan chapels.

"This, though it was written in absolute good faith on my part, is a mis-statement. The late Sir Robert Fowler frequently preached, and occasionally in Wesleyan chapels; but Mr. Henry Fowler has never done so.

"RAYMOND BLATHWAYT."

PRIZE COMPETITIONS.

AWARDS.

THE Editor has much pleasure in publishing the Awards in the following Competitions. The results of each have been very gratifying (with the exception of the Musical Competition) both in the number of competitors and the quality of the work. The Editor hopes to publish the successful MSS. and Photographs in due course.

FOUR-PART STORY COMPETITION.

The First Prize of £50 is awarded to
Mrs. CURRY, Holy Trinity Rectory, Merrick Square, S.E.

The Second Prize of £40 to
Miss PHILIPPA M. LEGGE, 45, Friar Gate, Derby.

The Third Prize of £30 to
Miss E. TURPIN, Forestdene, Magdala Road, Nottingham.

Commended:—

Name.	Address.
H. DALZELL...	High Barnet.
E. S. HUTCHENS ...	Andover.
S. ST. JOHN GARD ...	Dudley.
N. M. MARRIS ...	Birmingham.
E. C. MATTHEWS ...	Wandsworth, S.W.
E. POLAND ...	Maida Hill, W.
L. FROST RATTRAY ...	Auckland, New Zealand.

BALLAD COMPETITION.

The First Prize of £5 is awarded to
J. M. WAGSTAFF, 24, Cheyne Court, S.W.

The Second Prize of £4 to
MARGARET CRAVEN, Rocklands, Plumgarths, Kendal.

The Third Prize of £3 to
CHARLES OWEN, 21, Tin Street, Featherstall Road North, Oldham.

And an Extra Prize of £2 to
ALICE E. HEWITT, 253, Cleethorpe Road, Grimsby.

HONOURABLE MENTION is accorded to:—

Name.	Address.
M. E. OWEN SNOW ...	Banff, N.B.
J. W. CHAMBERS ...	Cury, R.S.O.
J. ARMSTRONG ...	Hay, R.S.O.

Commended:—

I. HEBBLETHWAITE ...	Boston Spa.
M. E. KENNEDY ...	Clonskea.
L. DICKINSON ...	Branston.

PHOTOGRAPHIC LANDSCAPE COMPETITION.

The First Prize of £5 is awarded to
GEORGE E. BRYANT, 2, York Place, Cheetham Hill, Manchester.

The Second Prize of £4 to
MARTIN J. HARDING, 4, Lexden Gardens, Shrewsbury.

The Third Prize of £3 to
T. W. NETTLESHIP, Harworth Place, Bawtry, Yorks.

And an Extra Prize of £2 to
S. FRANCIS CLARKE, 8, Uppgate, Louth.

HONOURABLE MENTION is accorded to:—

Name.	Address.
H. NICHOLS ...	Solihull, Worcs.
H. WRIGHT ...	Newcastle-on-Tyne.

Commended:—

V. C. BAIRD ...	Broughty Ferry.
S. S. SHEPHERD ...	Bradford, Yorks.

MUSICAL COMPETITION.

The Judges report that no MSS. of sufficient merit were received to justify the award of the First and Second Prizes; but

The Third Prize of £3 is awarded to
J. MOUNTFORT, 3, Grosvenor Villas, Coventry.

Commended:—

A. P. SPENCE, Newcastle-on-Tyne.