

and babbling through friend Ellerslie's grounds. It shall serve as our guide.

When we have got down some distance we enter into quite other surroundings. The wide, open, heath-clad moor offers Time almost as unpromising a surface for writing its inscriptions as the surface of the ocean itself, and is probably, in all outward seeming, much as it was when the ancient Britons inhabited the land. The clough, into which our babbling stream-guide leads us, and in which, while men have come and men have gone, it has gone on, if not for ever, for a very long time, wearing, or finding, its way, could tell a much more changeful story; for here rain and frost and all the varied agencies of Nature have been ever at work. Especially busy with a most unceasing activity has been the little stream, whose clear water tumbles over rocks in many a miniature rapid, and now and then a fall, while here and there banks of pebbles tell how, during heavy rain, it gathers force and intensity

as it rushes down between the rocks that shut it in its narrower channels, and carries along the sand and gravel, which, perforce, it must drop when it reaches the more open spots. Mosses richly decorate the stones around and between which its waters are rushing, while ferns fringe its sides. The whole is shut in by sycamore trees, that give a delicious coolness to the stream where they overshadow it, and that impart to the clough an air of securest seclusion, without being so thickly set as to exclude the light. Between them the sun shines down upon and through the rippling water, limning changeful lines of fairy-like brightness and delicacy on the stony bed. It shines here on the bank, where the bees are busy with the purple nettles, and there it is ripening the wild raspberries. The sycamore leaves are golden with its light, that passes through them in beautiful contrast with the leaves of the undergrowth, on which a grey gleam reflects more or less completely the blue of the clear sky.

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.

Teaching Perception.



Mr. Kerr, head-master of Allan Glen's School, Glasgow, has introduced a new method of teaching a class readiness of perception and mental calculation. The device employed, called the Allan Glen Revolver, is illustrated herewith and consists of a revolving blackboard, B, having a shelf, S, attached, on which an article can be placed. On the side of

the board turned from the pupils, rows of figures, dots, or letters are marked, and the board is spun round at different speeds. The pupils must brace themselves up to read the words, or figures, and count the dots. The exercises are graduated, and become more difficult. The board is also used in the freehand drawing class to train the students in grasping and fixing contours in their minds. For example, a jar is placed on the revolving shelf, and the students are expected to draw its outline. Pictures are also shown for a moment in the same way. Lengths, areas,

and volumes are also estimated by exposing certain examples side by side with others of known dimensions.

A Cross-Country Railroad.

Let no one think that the days of railway enterprise have passed away. Even in England a district has been found in which the railway has never been, and the new line from West to East, from the docks in the Ship Canal at Warrington to those on the North Sea at Sutton, in Lincolnshire, will, within three years, be a fact accomplished.

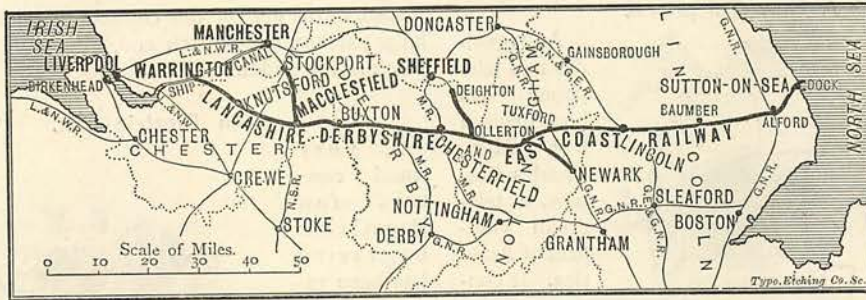
A glance at the accompanying sketch map will show the aims and objects of the promoters of the line—noblemen and gentlemen connected with great Derbyshire coal industries, who, dissatisfied with the present means for the distribution of the output, determined upon a line of their own, and on connections by means of which the development of their property and its products could be assured.

With this view the line already projected will be made extending, when completed, for 170 miles, possessing "feeders" to many important towns, and access to London along the Great Northern and Great Eastern Railways. To the Great Eastern line the benefits of the new railway promise immense advantages in the carriage of minerals alone.

The course of the East to West Line—or, officially, the Lancashire, Derbyshire, and East Coast Railway—is from Warrington, a very important town, through Knutsford to Macclesfield; thence by Buxton of

water-cure fame, and the celebrated Peak country to Chatsworth and Chesterfield; thence *via* Ollerton and Tuxford to Lincoln, traversing the coal-fields of Derbyshire, half-way between Doncaster and Notting-

of the earth has shifted by one-third of a second in recent years. The discovery has, of course, an astronomical importance, but is not likely to perceptibly affect the general condition of the world.



A CROSS-COUNTRY RAILROAD.

ham. The main line from the cathedral city is then continued in a slightly northerly direction, by Baumber and Alford, to Sutton-on-Sea, some twenty miles south of Grimsby.

The advantages conferred by the railway will be very great—not only, as is hoped, to the shareholders and promoters, but to the public. The railroad will traverse a district hardly touched by existing lines; it will have important branches to Manchester, Stockport, Beighton, Newark, and connections with Liverpool, on the one hand, and London, as well as all the towns *en route* thither on the main lines, already mentioned, and their branches. Thus Derbyshire and Nottinghamshire, their coalfields and ironworks, with the incalculable products of both, will be brought into touch with the continents of Europe and America. The benefits which will accrue to the farmer and the merchant, to the coal-owner and the manufacturer, may be estimated from the fact that produce of all kinds may by it be brought from the far East and forwarded to America without breaking bulk.

Shifting Latitudes.

In 1876 Sir William Thomson, the great physicist, who has recently been elevated to the peerage, arrived at the conclusion that changes in the sea-level brought about by the weather might displace the direction of the earth's axis in space, or, in other words, sway the world from its old balance and so produce an alteration of latitude to the extent of half a second. Since then his conclusion has been verified in a remarkable manner. Of late years it has been observed that the latitude of Berlin and other Continental cities has altered by a fraction of a second—about a third in fact—and the change could not be traced to errors of observation. Accordingly a party was sent to Honolulu, which is nearly opposite to Berlin on the earth's surface, in order to measure its latitude and find out whether it had shifted by a corresponding amount in the opposite direction. The commission have now done so, and find that it has. So we are forced to infer that the axis

Another New Egg-Cooker.

How is it that domestic invention has run so much in the direction of egg-cookers as it has done during the last year or two? For the third time within a comparatively brief period we have an apparatus of this nature to describe, and in this case the inventor is a Parisian, M. Mesdran, whose invention is illustrated in the accompanying blocks. The hollow central cylinder, A, of Fig. 1 slides over the other cylinder, B, containing a notch in which the trigger, C, will catch when the upper

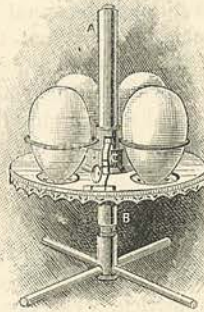


FIG. 1.

cylinder is pressed down, carrying with it the tray upon which stand the eggs. This is done inside the saucepan, shown in Fig. 2; the eggs are just covered with cold water, and the spirit lamp is lighted. As soon as the eggs are cooked the pressure of the steam will release the trigger, and the coiled spring within the central cylinder will automatically lift the eggs out of the water, as shown in our illustration, and at the same time

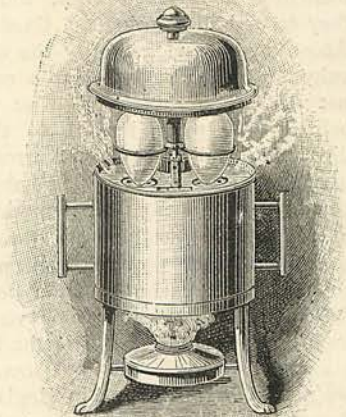
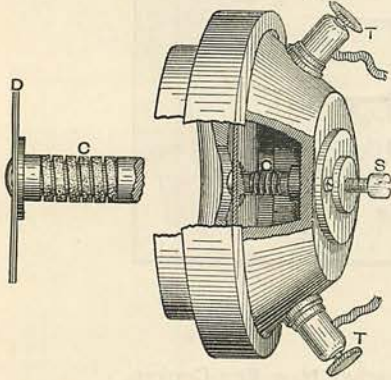


FIG. 2.

raise the lid of the saucepan. By a simple screw attachment to the trigger the time of cooking may be readily regulated. We ought to say that this method of cooking is scientifically approved, though it occupies somewhat longer than the traditional three minutes.

A New Telephone.



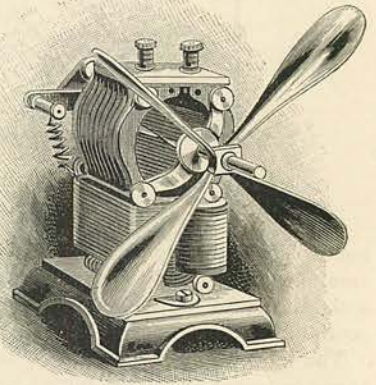
and vibrates under the impact of the sonorous waves. A spiral of carbon filament, C, is cemented to the middle of the diaphragm, and to an adjusting screw, S, by which the spires can be brought closer to each other. The current is led through the spiral by connecting wires to the terminals, T, T. When the diaphragm vibrates the spires of the carbon approach to and recede from each other, thus diminishing and increasing the resistance of the spiral and varying the strength of the current in accordance with the vibrations of the voice.

A New Ostrich.

By the kindness of Mr. Keith Anstruther, of the Imperial British East Africa Company, the Zoological Society once more possesses an ostrich. The donor intended to grace the Gardens with a pair, but, unfortunately, only the female arrived alive. There has been a good deal of difficulty in keeping ostriches in Regent's Park, though they do well in Continental Gardens. According to one authority the difficulty arose because "the birds could not discriminate between what was helpful and what hurtful to their digestion; and a public accustomed to slip pennies into automatic machines could not refrain from the temptation offered by their omnivorous throats, and filled them up with poisonous copper." Let us hope that a better fate is in store for our new visitor from Somali Land, for she is the first example of the species (*Struthio molybdophanes*) exhibited in England, though it has been known since 1883. Its general appearance is much like that of the common ostrich, but the parts of the skin that are not plumaged are of a greyish blue, while in the

common form they are flesh-coloured. In the adult male the beak and a plate in front of the tarsus are reddish. There is also a difference in the eggs: those of the new species, apparently confined to Somali Land, are said to be larger and more rounded, and the pores (which are scattered pretty evenly over the surface of the egg of the common ostrich) form two large patches, one at each end, with a nearly poreless patch in the middle.

An Electric Fan.



A very small electric fan shown in our engraving has been recently introduced. It stands $4\frac{1}{2}$ in. high, and has an ornamental appearance, suitable for the rooms of a house. The blades

of the fan are driven by an electromagnet, which is excited by the electric current from a single "dry" cell—that is to say, a cell which does not require to be replenished with liquids.

An Automatic Postman.

In Geneva they have an apparatus for delivering letters and parcels to the upper stories of high buildings. The common letter box is situated on the ground floor, and has compartments in it for every story. Into these the postman puts the letters and parcels. An electric circuit is thus closed, and a current of electricity from a battery turns on a supply of



A NEW OSTRICH.

water from a cistern at the top of the house. The water flows into a cylinder acting as a counterweight to the letter box, which begins to ascend to the top story, but on the way it automatically drops its cargo of letters and parcels at the proper flats. When the highest floor is reached, the water escapes from the cylinder, and the letter box returns to the ground floor.

A New Gas-Lamp.



FIG. 1.

In this regenerative lamp the gas burns between two currents of heated air, one striking on the upper, the other on the under, side of the flame. In the new lamp which we illustrate, the burners are of steatite, and hence do not readily choke; and the black shadows on the ceiling are obviated by a translucent reflector throwing part of the light down, and another part up. There are other improvements on the earlier lamps; for example, the addition of a regulator for the supply of the gas and prevention of smoke. Fig. 1 represents a hanging type suitable for the principal rooms of a dwelling house. The body, B, is encased in enamelled steel or porcelain, and the reflector, R, is of opal glass. Fig. 2 represents a standard lamp suitable for desks and reading tables.

The "Painter" of Callao.

The "pintor" or painter of Callao is a curious phenomenon observed in the Bay during the summer months from December to April; and according to recent investigations by Señor Raimondi, it consists of evolutions of sulphuretted hydrogen gas which changes the colour of objects painted with white lead, and hence the name. At such times, too, the sea becomes red with a species of infusoria. Señor Raimondi shows that the gas comes from the vegetable mud brought down by the river Rimac which does not escape from the Bay owing to the Humboldt current

crossing its mouth. The same phenomenon is seen on other parts of the Peruvian coast where the like causes obtain.

The Tea-Plant of America.

From of old the Creeks and Cherokee Indians of Georgia and Florida have made a kind of tea or "black drink" from a species of holly (*illex cassine*) which grows along the coast of the southern States of America, from James River to the Rio Grande. According to a recent bulletin of the United States Department of Agriculture, the leaves and twigs contain caffeine or theine, and the infusion seems to have salutary properties which are wanting in tea. It is proposed to cultivate the plant on the maritime belt above mentioned, of which some 40,000 acres are available for the purpose.

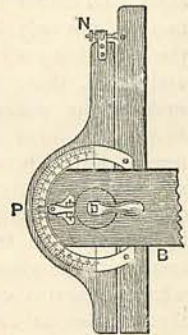
A Fire-Bucket Holder.

Water buckets in rows for use in case of fire are apt to become empty from evaporation and dirty from dust. To remedy these evils a holder or tank has been brought out, the buckets being ranged one over another in the tank, so as to take up as little space as possible and yet be filled with clean water when lifted out in case of fire. The tank is covered with an air-tight lid, and being ornamental, it is more sightly than the open sets of buckets, while not occupying quite so much space in a hall or corridor.

A Protracting T-Square.

The new T-square shown in the engraving is of American device, and enables the draughtsman to draw any angle with great precision. The square is first approximately adjusted and clamped by hand, then finely adjusted by means of the screws, N, which turn the auxiliary head of the square round a centre coinciding with the main stud. The blade, B, is clamped in its place by an eccentric lever instead of a milled nut.

The pointer of the protractor, P, is also adjustable by set screws, so that the blade can be brought into a position coinciding with a line previously drawn or to compensate for an inaccurate drawing board.



A Fossil Mammal from the European Chalk.

By slow degrees gaps in the "geological record" are being filled up; and though from the nature of things it is idle to expect that that record will ever be made complete and continuous, we may hope that the steady persevering search which is being prosecuted almost everywhere, will lead to solid additions to our knowledge of the animals which lived on this planet before the age of man. Till quite recently no remains of mammals had been found in the European Chalk. In the Purbeck beds of Dorsetshire several genera of small marsupials were known, and one of these little pouched mammals was said to have its nearest living allies in the kangaroo-rat of Australia. Above the Purbeck

beds they all seemed to die out, and there were no more traces of mammals till the Tertiary period. In a quarry near Hastings, however, a bone-bed in the Wadhurst clay, in the Wealden formation, has yielded evidence that this little marsupial, or a closely-allied genus, survived in Britain till later times; for a tooth, closely resembling those in the jaw on which the genus *Plagiaulax*—for so the animal is called—was founded, has been discovered there by Mr. Dawson, of Uckfield, who has spent a great deal of time in carefully examining this deposit. He forwarded his find to the Natural History Museum at South Kensington, and the authorities there have named the animal to which the tooth belonged *Plagiaulax dawsoni*, in honour of the discoverer, whose labours have been rewarded by the first traces of a mammal from the European Chalk.

Novelties for the Household.

A seasonable novelty is a removable metal cover for glasses or jugs, and equally applicable to jars for jam or marmalade. It is the invention of Mr. F. Mockler, who fixes the cover to the glass by means of a simple flexible clip, which does no harm to the vessel and holds the lid securely in its place as a barrier to all intruding insects or to the other thousand and one waifs and strays of outdoor life at the present season.—Passing from the garden or the summer-house to the kitchen, we have to notice a new kettle, appropriately named "The Rapid," which has a shield fixed round it at a little distance from its sides. Of course this shield acts as a "drawer" to the fire, and not only keeps the cold air from the sides of the kettle but sucks up the flames between the kettle and itself, thus, as its inventor claims, not only making the water boil more rapidly, but actually saving the wear and tear on the kettle.—Another novelty for kitchen use is a reversible "fish fryer and strainer" for frying flat fish or steaks of fish. Two oval-shaped strainers of stout wire net are connected by a hinge and secured by a catch. Between these two the fish is placed, and when one side is cooked the whole apparatus can be readily turned by means of the handles at either end, without the necessity of handling the fish, or the risk of breaking it, during the operation.—Castor oil is not a household favourite, but it is quite a household necessary. A new preparation of the oil has just been brought out under the name of Palma Christi, in which all the essential and medicinal qualities are preserved, though the dose is rendered distinctly palatable and even sweet. This prepared oil has undergone severe medical tests, and it is reported to stand them well in the opinion of competent authorities.—A new combined note-paper, and envelope, under the title of *Semper Paratus*, has just been introduced. The note-paper is cut in such a way that the piece taken from one corner forms one flap of the outside covering that serves as the envelope. For short notes and ready use this new invention is to be commended.

Who may Marry—and When?

Like all English law, our marriage law is the outcome of a long-continued growth, and the result is a

strange medley of delightfully simple and incomprehensibly difficult points. Few of us who are not lawyers know exactly when marriage is or is not legal to any given person, or to what extent parental sanction can facilitate or prohibit a wedding. And if this is the case with English weddings, to how much greater extent is it so of what are called "mixed-marriages" between two persons, respectively of British and of foreign birth or domicile? Two barristers are responsible for "Lawful Wedlock"—a daintily dressed little handbook which Messrs. Cassell and Co. have published, and in which all knotty points likely to arise in ordinary life are explained in language to be "understood of the people." But these points are not all; "Breach of Promise" is dealt with, and so are the outlines of the law affecting the property of married women.

"Profitable Poultry Keeping"

Is a little handbook professedly written for amateurs by F. A. McKenzie, and published by Mr. L. Upcott Gill. It treats of all ordinary details of the rearing, feeding, and even the doctoring of fowls of every sort. It is practical throughout, and will be found of value by all who have taken up the care of fowls, whether for the sake of a supply of fresh eggs, or for the table.

THREE-PART ADVENTURE STORY COMPETITION.

AWARD OF PRIZES.

After careful consideration of all the MSS. submitted in response to the notice in our January number, the FIRST PRIZE OF TWENTY POUNDS has been awarded to

SIDNEY C. GRIER,
Kirkley, St. Anne's Road, Eastbourne;

The SECOND PRIZE OF FIFTEEN POUNDS to

BESSIE E. DUFFETT,
Meadvale, Redhill;

And the THIRD PRIZE OF TEN POUNDS to

L. FROST-RATTRAY,
Auckland, New Zealand;

And HONOURABLE MENTION to the following competitors:—

<i>Name.</i>	<i>Address.</i>
B. A. CHAMBERS ...	Rotherham.
J. M. WAGSTAFF ...	Wandsworth Common, S.W.

The Editor hopes to publish the prize stories in the Magazine in due course.

Unsuccessful competitors who desire the return of their MSS. must, in accordance with Rule 7 of the General Regulations published in our January number, apply at once to the Editor; and every application must be accompanied by stamps to defray the cost of carriage.

Intending competitors in the Four-Part Story Competition are reminded that September 1st, 1892, is the latest day for receiving MSS. Full particulars of this competition will be found on page 128 of our January number.