

shire lace. Grenadine embroidery is now made in any colour to match the gown. Quantities of lace are likewise used for trimming.

The taste of the present day is undoubtedly very extravagant. We see lingerie made up in the most costly manner. Dressing-jackets are wonderfully elaborate. Tea-gowns are made of the richest materials; and, noting the luxurious appointments and surroundings which greet us on every side, one is apt to speculate from whence come the means for all these "superfluities." The best taste, however, is generally unobtrusive in character, and anything outside the mark is better avoided.

Dainty little pocket-handkerchiefs with goffered borders, intended to be worn with a corner just peeping out from the dress-bodice, are much affected at present. Lace jabots and cascades, of antique valenciennes and the numberless new laces, are much used for finishing high gowns. Old lace is quite laid aside in favour of the wonderful imitations, as to wear *real* lace is, I regret to say, considered old-fashioned. I heard the other day of some Mousquetaire gloves one yard and a quarter in length. These are drawn on and then pushed carelessly down the arm in rucks or puckers. This is an age of eccentricities. We now hear of sunflowers by way of decoration. The small variety is rather pretty, but surely they are more at home in an old-fashioned country garden than as fashionable appendages.

The dresses that are illustrated in the accompanying engravings may be made up in either costly and rich materials, such as brocades and satins, or in such fabrics as the less expensive but still fresh sateens, foulards, percales, &c. The sateens are so beautiful this season that if judiciously selected, with due re-

gard to the complexion and style of the wearer, the happiest results are obtainable.

The group in which two small children are the central figures, offers many suggestions in the making of dresses. The long redingote over the flounced skirt worn by the lady seated at the piano, is a popular style made up in plain and broché satin; the standing figure at her back shows off a pretty costume of nun's veiling in which gatherings play a prominent part. The new green-cream is a suitable colour at this season of the year, and is particularly pretty in soft materials. The little girls both wear sateen frocks. The remaining figure shows the new bunched-up train and also the basque of loops, lined with a contrasting colour, and headed with a band of trimming that defines a pointed waist.

In the outlined figures we find a dress made with a beaded plastron, in which both steel and gold beads play a prominent part; and in the other dress, suggestions for making up any material that has a printed border at one selvedge.

In the first group, arrayed for promenade, we have long and short dresses, suitable for garden parties, seaside or country walks, &c. The youthful matron holding her small daughter by the hands wears a painted dress. The revers on the skirt and cuffs, and the ornamentation down the front and round the neck of the bodice, are hand-painted; the tablier shows the new bouillonné flounces.

The garden party toilette is of pale blue shot satin and of broché satin. The new figured Madras muslin over satin would also be suitable for this dress. Suede mittens of the ever-popular tan or cinnamon-brown colour are much worn at this season of the year with this style of dress.

THE GATHERER.

A Useful Ventilator.

According to Dr. McKinnon, of Windsor, Ontario, perfect ventilation can easily be obtained by very simple means, in all rooms which are heated by stoves. The stove-pipe is surrounded by a cylinder of sheet-iron, having a diameter large enough to allow a space of two and a half inches between it and the pipe. Through openings in the lower part of this sheet-iron envelope the vitiated air of the room is admitted; it then passes upward as it becomes heated between the pipe and the cylinder for eighteen or twenty inches, at which point it enters an opening in the stove-pipe and escapes with the smoke.

Disc Scissors.

A novel pair of scissors has been devised by Herr Sievert, of Dresden. The blades are represented by two circular steel knives, which slightly overlap at the edges, and are pressed together by two spiral springs.

The knives are fastened to a pair of wooden rollers with india-rubber rims, which grip and guide the cloth or paper as it passes between the knives, so that the latter may cut straight. These cutters are carried by two handles or levers which are held in the hand, and the cutting is effected by pushing the scissors forward, so as to cause the rollers to revolve.

Self-opening Tins.

Preserved meat tins and other sealed canisters are often very troublesome to open, and we are therefore glad to see that an easily-opened tin box has been devised by Mr. J. Featherstone-Griffin. Just beneath the lip of the box there is formed a swell or bevel, and the lid is fitted on above the bevel as shown in Fig. 1. To open the box it is only necessary to give it a few blows round the edge, so as to force the lid down upon the bulging part of the box below. The latter then acts as a wedge, and bursts open the cover as shown in Fig. 2. The fact that these tins are soldered



FIG. 1.



FIG. 2.

from the outside is also an advantage to them, for it prevents the access of unwholesome matter to the food inside.

A New Gem.

"Hiddenite" is the name given to a new gem which has recently been discovered in Alexander County, North Carolina, by Mr. W. E. Hidden. It is a variety of spondumene, and resembles the emerald, but has a more ethereal tint peculiar to itself. The green lustre is of a rare brilliancy, and is probably due to vanadium in the stone. It is hard, transparent, and rare, so that it has already taken rank as one of the most precious gems, equal in price to the diamond. This high value may, however, be partly due to the fact that it is the first known gem of pure American origin.

A Folding Bath.

Cupboard-beds have had their day, and are, seemingly, to be replaced by cupboard-baths, with the exception that

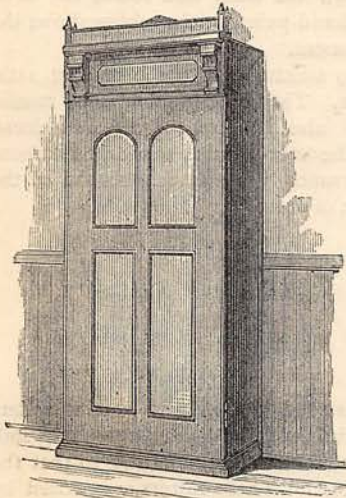


FIG. 1.

whereas the former were movable, the latter will be stationary, unless the bath is taken to pieces so as to separate it from the pipes, which of course cannot be removed. Fig. 1 shows the ornamental article of furniture which really contains the bath; Fig. 2 represents the arrangement of pipes for the supply and withdrawal of the water, and Fig. 3

discloses the bath placed for use. To the bottom of the bath, A (Fig. 2), are fastened flanges of the elbows, B, whose horizontal arms extend through stuffing-boxes, C, on the hollow supports, D, and constitute the pivots on which the bath turns. One of the supports, D, has an adjustment, E, on each side, one for hot, the other for cold water, the two pipes being furnished

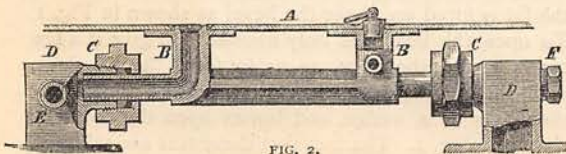


FIG. 2.

with stop-valves, which may be seen in the back of the case in Fig. 3. The outlet is supplied with the usual plug and strainer, and a pipe, F, leads to the water or sewer pipe. The bath has a pair of hinged legs in front, which fold automatically when the bath is raised up. Of course, the

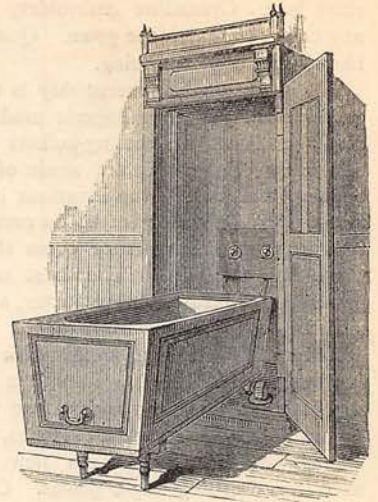


FIG. 3.

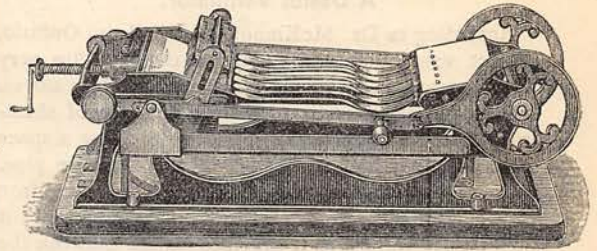
bath need not be fitted within the "dummy" case; the apparatus could be fitted into an ordinary cupboard; though, if the invention has any utility at all, it would appear to be in the former rather than the latter form.

Birch-bark Rubber.

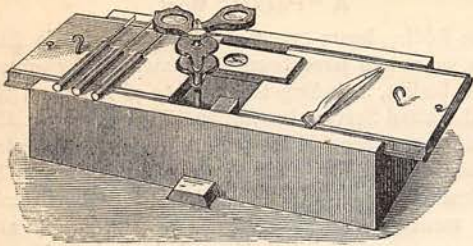
A French chemist has obtained a dense black gum from the outer layers of the birch-tree bark by distillation. It possesses all the ordinary properties of gutta-percha, and has the additional merit of resisting the deteriorating influence of air and the corrosive action of acids. This advantage makes it useful as an ingredient of india-rubber and gutta-percha, which it renders far more durable.

A Mechanical Fork-Cleaner.

A useful little labour-saving machine has been introduced by Mr. Hutchison in the form of a fork-



cleaner. As shown in the wood-cut, it is constructed to clean six large or small forks simultaneously by the simple turning of a handle. The cleansing paste is first applied, then the turning of the handle actuates a pair of soft brushes, one above and one below, which traverse the forks from end to end and polish them on the way. In addition to the time and labour saved in the process, the forks are preserved from being bent out of shape or otherwise disfigured.



A Botanical Dissecting Microscope.

The little instrument represented in the accompanying wood-cut is the simplest and most effective application of the microscope for rough-and-ready use in the study of botany that field-naturalists and others could desire. It consists of a box contrived so that it will form a dissecting stage. The lid is divided across, and each half slides outwards, so that it may be readily adjusted a certain distance apart, exactly the length of the dissecting slide; this slide or stage—each end of which rests on a pit hollowed out in the upper surface of the lids—being placed across the interior space towards the far side of the box. A duplex lens (giving powers of 4, 6, and 10 diameters) is placed towards the near side of the box, and is carried on a brass focussing tube for perpendicular adjustment, sliding on an upright brass rod, or pillar, fixed to a movable bar at the bottom of the box for horizontal adjustment. Thus, owing to the ingenious construction of the instrument, and especially the lid, the student not only has *both hands free* when dissecting a flower, but has also a *rest for his wrists*. These are features of very great practical value. The Houston Botanical Microscope (called after its inventor, the well-known lecturer) is provided with two slides, one of cork (having one side plain, and the other with a cavity for dissecting seeds, &c.), and one of glass (one side plain, the other with a cavity for the dissection of objects in water), besides mounted needles, a knife or cutting-needle, and a pair of forceps. Altogether, this instrument is a marvel of cheapness and efficiency.

New Domestic Balances.

Two very neat domestic weighers have been devised by a French mechanician. They are illustrated in the

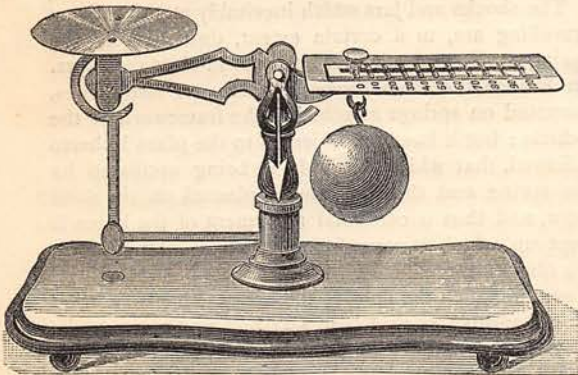


FIG. 1.

accompanying figures, which almost explain themselves. The first is for weighing light articles, such as letters, and is merely a small steelyard with a sliding ball, and arrow-pointer, which is vertical when the balance is quite just. The pan is kept horizontal in all positions by the action of its supporting frame. The second balance is a variety of dynamometer, in which the weight compresses a spiral spring, and thereby moves a hand round a dial indicating the number of kilograms and parts of a kilogram that the body weighs.

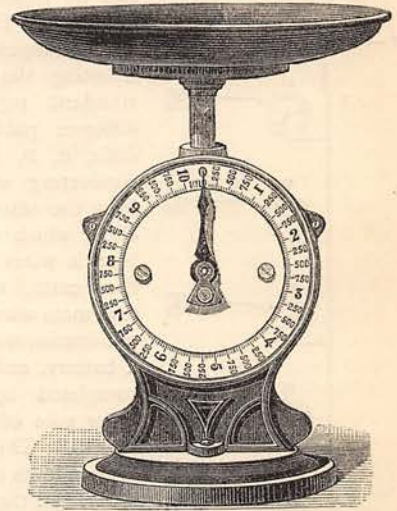


FIG. 2.

The chief merit of these domestic balances consists in the fact that they cause no loss of time in changing and adjusting weights.

Time by Electricity.

In Paris the town clocks are kept in time with an astronomical standard clock by means of pulses of compressed air sent at regular intervals along pneumatic pipes, and the plan is under consideration for London. Electricity, however, seems to be a more apt agent to employ for this purpose, and the electrically regulated clocks of Messrs. Barraud and Lund are found to answer well in Glasgow. The simplest system for dispensing time by means of the electric current which we have yet seen is that devised by Mr. F. E. Fahrig, an electrician of Southampton. This consists of a standard clock, shown in Fig. 1, which winds itself up regularly every hour by means of two contact springs, which close the circuit of an electric battery concealed in the bottom of the case, and send a current through an electro-magnet, which shifts a lever and ratchet wheel, thereby raising the weight back again to the position it occupied at the beginning of the hour. A battery

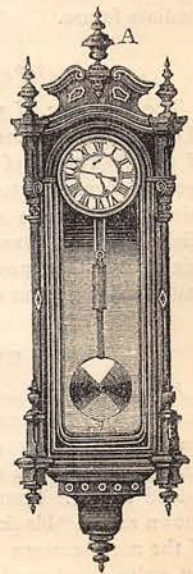


FIG. 1.

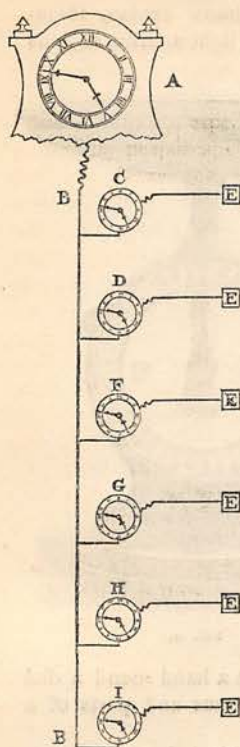


FIG. 2.

suitable for this work is constructed by Mr. Fahrig, and lasts for two years, when it can be repaired again in a short time. Fig. 2 illustrates the arrangement for distributing the time of the standard regulator, A, to different public or private dials, C, D, F, G, H, I. A conducting wire, B, leads from the standard to all the dials, which are placed in branch wires connected to the "earth," E. One end of this main wire, B, is in communication with one pole of a battery, and the circuit is completed by putting the other pole of the battery to "earth." This is done once every minute by the standard clock, and the current, passing through an electromagnet attached to each dial, shifts the centre wheel which carries the minute hand one tooth. This wheel has sixty teeth, so that in an

hour it has made a round of the dial, and the hour hand follows at its appropriate pace. So long as the batteries continue working with sufficient strength this system is automatic and requires no winding up, and but little care, for the mechanism of the dials is very simple. Moreover, when dynamo-electric currents are more common, there will not be any fear of the electric power failing, and hence it is probable that electrically regulated time is one of the conveniences of the immediate future.

Petroleum Soap.

The low price of petroleum, as compared with that of other fatty oils, has led to its use in the manufacture of soap. The chief difficulty to be overcome in the process of manufacture is the conversion of the limpid mineral oil into a solid; but this has been accomplished by Mr. Bastet, of Brooklyn, New York, by mixing it with a proportion of fatty or vegetable oil, and alkalisising them in a special manner.

Black Potatoes.

A lady correspondent of *The Farmer* writes to say that she has produced a black variety of the potato, black to the very core; and, though presenting a strange appearance on the table, they are very nice indeed to eat. Some fifteen years ago a dark sort, known as the "black hearts," was cultivated in some of the north-eastern parts of Scotland, but these were not quite so ebony in looks, nor were they very good to taste.

A "Pocket" Boat.

The folding-boats invented by Captain De la Sala a few years ago have been recommended by several public bodies, including the Society of Arts and the Royal United Service Institution. They are especially useful for sporting and life-preserving purposes, owing to their portability and buoyant properties. The smallest of these, which is claimed to be unsinkable, measures 7 ft. long by 2 ft. 3 in. wide, and will carry two persons. Nevertheless, it folds up into a small, compact bundle, easily carried in the hand, if not the pocket, and weighing only 20 lbs. While upon this subject we may mention the American "canvas-boats," made of waterproofed canvas, and held to be more trustworthy than birch-bark canoes. Boats 12 ft. in length, designed to carry two persons, will also transport 600 lbs. of cargo, and draw only 4 ft. of water. They are packed in boxes about 38 in. cube, and can be made ready for the water in two or three minutes.

Molecular Music.

The beautiful researches of Mr. C. W. Crookes have made us familiar with the phenomenon of "molecular bombardment," that is, the battering of gaseous molecules in a highly vacuous space, and it has been suggested that this hail of atoms could be rendered audible by means of a delicate microphone. But such a detector is not really necessary, for Mr. C. R. Ross, of America, has found that the stream of electrified particles which in a Crookes' vacuum tube is repelled from a concave metal mirror so as to play on a sheet of thin platinum, not only hammers the platinum red-hot, like the blows of a smith upon the anvil, but also gives out a ringing musical note. The best effect is obtained when the mirror is negatively charged with electricity; only a feeble murmur being heard when it was positively charged. The pitch of the note seemed entirely due to the vibration of the platinum tongue under the impact of the molecules, and the sound resembled a musical version of the pattering of rain upon a window-pane.

Suspending Railway Seats.

The shocks and jars which inevitably attend railway travelling are, to a certain extent, deadened by the spring stuffing of our first and second-class carriages. In France the seats themselves are, on some lines, mounted on springs attached to the framework of the vehicle; but it has been objected to the plans hitherto followed, that while the body is being oscillated by the spring seat the feet remain planted on the solid floor, and thus a continual movement of the knees is kept up, which is very fatiguing on a long journey. To obviate this difficulty, M. Delessert has introduced a seat in which the floor of the carriage is also carried by the springs, so that both seat and foot-rest partake of the same oscillations, and the whole body of the passenger moves in one direction. This is done by rigidly suspending the floor between the two opposite

seats of a carriage from the springs underneath the stuffed bottoms of the seats. The contrivance has been highly successful on the Western Railway of France, and it is equally applicable to ordinary cabs and omnibuses.

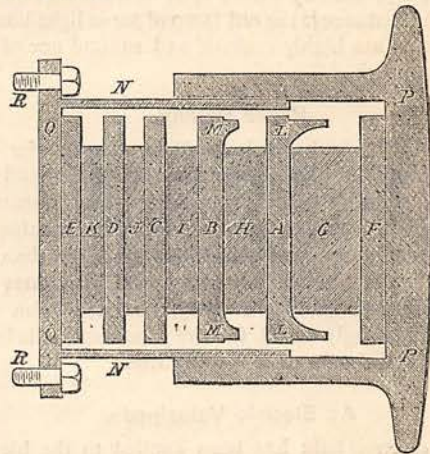
The Spectrophone.

In his researches on the photophone, Professor Graham Bell found that when an intermittent beam of light was allowed to fall on thin discs of ebonite, metal, paper, or indeed any substance whatever, the disc emitted a musical note of a pitch corresponding to the number of flashes of the light per second. Subsequent experiments have led him to the conclusion that the best effects are obtained, not from discs, but loose porous bodies, like wool or dust, and especially if their colour be dark. Lamp-black, which combines both of these properties, gives out the loudest tone when the rapidly-eclipsed ray of light falls upon it. Liquids give, as a rule, feebler sounds than solids, and gases feebler still than liquids. Lamp-black has proved so serviceable that Professor Bell has actually adopted it instead of the selenium receiver in his photophone, and spoken words transmitted along the beam of light can be rendered audible by falling on a surface of this common material, if it be connected to the ear by a hearing-tube. In the photophone transmitter the voice of the speaker, as is well known, vibrates a mirror reflecting a beam of light; and the corresponding undulations of the beam breaking on the lamp-black cause it to expand and contract as if it were a sensitive body. The air around it is thus set into vibrations which are audible as a reproduction of the original sounds. This is an important discovery, for it dispenses with selenium, a rare and troublesome substance, as well as a telephone and battery, in the construction of the photophone. A totally new instrument has, moreover, also sprung out of these experiments. This is termed by Professor Bell the "spectrophone," and it is designed to analyse the invisible part of the spectrum beyond the red rays. Of course, the ordinary spectroscope fails here entirely, and the thermo-pile is resorted to; but the spectrophone promises to be superior. It consists in passing a rapidly-intermittent beam of light through the substance to be investigated, and forming the spectrum of it by the prism of a spectroscope. The observer's eye, however, is replaced by a lamp-black receiver connected to the ear by a hearing-tube. Then, as this receiver is moved across the invisible part of the spectrum, a sound will be heard in it, except at those parts where the substance under examination has *absorbed* the rays. These "absorption bands," as they are called, will be detected by the silence of the lamp-black receiver.

Artificial Seasoning of Wood.

In order to prepare timber for the sounding-boards of musical instruments, so that they will not alter in quality with the weather, Herr C. René, of Stettin, Germany, has introduced an artificial method of

his own, which has the effect of ageing the wood in a few hours, as well as if it had been kept seasoning for years. The plan consists in subjecting the timber selected to the action of oxygen which has been enriched with ozone by electric discharges, and for this purpose the wood is placed on an iron grating in a closed boiler, which is filled with oxygen, ozonised by means of an electric current. The boiler is then gently fired and kept hot for fifty hours, when the seasoning process is completed. Herr René claims that instruments made of this wood have a remarkably fine tone, which, like the violins of the Italian masters, improves with age. He states also that sounding-boards prepared in this way have the property of retaining sound longer and more fully than the ordinary boards; whereas other modes of artificial seasoning impregnate the wood with chemicals and spoil its quality.



A Graduated Railway Buffer.

The concussion of railway and other cars against each other is often disagreeable to the passengers inside, as well as detrimental to the vehicle itself, and it is satisfactory to know that a means of tempering the shock is furnished by the new buffer of Lieut.-Colonel Hugh A. Silver. This device operates like a spring cushion, and reduces the shock by gradually offering a greater and greater resistance to it. The buffer is constructed, as shown in the accompanying section, of several discs of ebonite or hard rubber, F, A, B, C, D, E, separated by a bedding of soft vulcanised rubber, G, H, I, J, K. The layers of soft rubber are thinner towards the rear, in order that they may offer a greater resistance to compression. The front discs have flanges, L, M, round their edges, so that the soft rubber when under pressure may not bulge out too far; and the whole is enclosed in a metal case, N, N, having a buffer-head, P, P, of the ordinary shape. The buffer is fixed to the railway or tram-car by the base-plate Q, and screw-bolts R, R. To give an idea of the gradual action, we may mention that while the buffer is compressed one inch by a force of 4,000 lbs., it takes 40,000 lbs. to compress it two inches. India-rubber springs of this kind should be useful for a variety of purposes.

A New Kind of Embroidery.

Mrs. Oliver Wendell Holmes, Junr., of Boston, United States, has introduced a novel kind of broidery, which bears a relation to ordinary needle art similar to that borne by the pictures of the impressionist to ordinary paintings. There is a dash about the patterns which has a very striking effect. The work is done by combining floss-silk and worsted together with silk and cotton thread on a background of silk or satin. There is no regularity of stitch, or parallelism of the threads, or exact number of darnings. One of the designs is thus described by an eye-witness:—"On a dark blue silk ground, imitative of an evening sky, there stands out in the foreground the gnarled limbs of a New England fir-tree. Dark masses of foliage, made by the thick onlaying of masses of worsted, indicate the irregular growth. The sheen of the moon on the water is expressed by silvery lines of white thread, and off in the distance is the red lamp of some light-house." The scenes are highly realistic and remind one of the Japanese method.

Paper Belting.

The Japanese have long been famous for the manufacture of paper, especially the finer and the tougher sorts. One of their latest achievements in this line is the production of a paper belt suitable for driving machinery, and said to be stronger than ordinary leather. Now that European machines are being adopted in that country, this invention will prove exceedingly useful, for the Japanese are inferior tanners, and do not make good leather.

An Electric Velocipede.

The electric light has been applied to the bicycle before now to light up the road in front of it, but M. Trouvé, of Paris, is the first to do away with personal exertion and drive the vehicle itself by the electric current. He effects this by connecting each axle to a small electric motor of his own construction, in such a manner that the rotation of the motor turns the wheels. The motors are themselves driven by the current stored up in secondary batteries, carried by the velocipede. Faure's electric reservoir, which we describe elsewhere, will prove very useful for this purpose. Recent trials with an English tricycle made in the Rue de Valois, an asphalted thoroughfare in Paris, showed that the vehicle, which with its occupant weighed nearly 4 cwt., could be maintained by the current at the speed of an ordinary cab for the space of an hour. M. Trouvé is now at work on an improved motor, which he hopes will suffice to drive the tricycle at a speed of twelve or fifteen miles an hour; and this motor, combined with Faure's secondary battery, ought to make the electric tricycle a practical invention, highly useful to the invalided or the weakly.

Prize Essay on True Economies in Household Management.—Our readers are reminded that Essays in this competition, open to all readers of the Magazine, must be in the Editor's hands not later than July 1.

Prize Answers to Prize Acrostics.

BY CHARLOTTE P. MITCHELL.

INTRODUCTION.

It was a dream; I stood within a cave
 'Neath a lone ocean's dark and silent wave;
 And near me, fearful in the semi-gloom,
 I saw a dark gigantic figure loom—
 The Mystery—the Sphinx! It towered there
 Huge, voiceless, rigid, with a frozen glare
 That turned my heart to stone. Silent I stood,
 My blood slow coursing in an icy flood,
 My brain half numbed with fear of what I saw,
 And all my being steeped in mystic awe;
 While at my feet, in shadow half concealed,
 Six ancient vessels lay all closed and sealed.
 So stood I there, till from the Mystery
 Came a dread voice like far-off moaning sea:
 "Mortal! in darkness sealed, lo! therein lie
 The hidden things which thou must show or die!"
 Then tremblingly I stooped and tried each seal.
 Alas! what though I tried, and tried full well?
 They had been closed and sealed with some dread spell!
 And in despair I cried at last, "Reveal
 The mighty word that shall dissolve this spell!"
 Then a dread shadow o'er the Mystery fell,
 And from its stone lips came the low reply:
 Seek thou, and find—and *live*; or fail—and *die*!
 The jars were formed as in far antique times,
 And round each marge were writ quaint runic rhymes;
 I read; and saw through every mystic line
 Faint ghosts of meanings twine and intertwine;
 The which I followed, some dim clue to clasp,
 But ah! they paled and glided from my grasp!
 For ever changing, seemed they ever aught,
 Whate'er I deemed them, yet, when caught, were nought!
 Till wearied out I flung the vessels down,
 And faced my torturer with a stubborn frown.
 But came a Spirit radiant, who said,
 "Patience!" then paled into a mist and fled.
 I sought my task again, *this* was my key,
 And all with ease I loosed each mystery.

I.

Loosed was the first; and blossomed forth to sight
 A *Snowdrop* and a *Primrose*, whence a light
 Soft exhalation rose, o'er which there drifted
 Faint spirit-pictures that for ever shifted.
 I saw another *Snowdrop*, fair to view
 And hung with sweetest *Nectar*'stead of dew;
 This vanished and I saw the gloomy tide
 Of *Obi's* waters heaving dark and wide;
 And Norman *William* on the further shore
 Hunting the *Deer*. And now this scene was o'er,
 And came, slow walking in a meadow green,
 Ill-fated *Rizzio* with fair *Scotia's* queen.
 Then changed the view to *Afric's* desert bare;
 And on a tiny *Oasis*, smiling there,
 Lo! a sweet *Primrose* bursting into bloom!
 I reached to cull it—all was sunk in gloom.

II.

The second opened, and in thought I rode
 T'wards *Reading* from fair *Grimsby*, with a load
 Of grief, for I in reverie was *Reading*
 A tale of hidden woe, of heart a-bleeding
 Within the breast of one from whom I now was speeding
 I looked upon the ring, an *Easter* token
 Given me when our troth-word first was spoken.
 The letters *AEI* entwined it bore,
 And tears fell on them as I conned them o'er;
 Till stooped I low with trembling lips to touch
 The simple letters that here meant so much.
 I now was seeking wealth that I might gain
 Sweet love and respite from the waiting pain.
 Nor finding what I sought, from town to town
 I passed from *Durham* northward, and then down
 To where fair *Isis* rolls her classic flood;
 And at the last on *India's* shore I stood.
 Here did I win the store of wealth and fame;
 A very golden *Nabob*, home I came;
 To *Grimsby* on the wings of love I sped,
 And sought her home—alas! my love was dead!