

into the armhole over the round puff of sleeve stiffening.

The next thing to be done is to drape the body with the chiffon. The three little puffings are gathered and sewn down to the silk as marked, and the hook fastenings sewn under the centre one, the edges are cut away close to the stitches and neatened with the long folds of chiffon gathered into neck, shoulder, seam, and waist—a straight silk collar-band with double loops of ribbon to match and a deep frill of chiffon setting out full around the throat. The belt of silk will be made folded tightly on a straight belt, with a draped front piece ending in loops fastened down with four little buttons of paste.

Her hat has a white silk crown, grey chiffon pleated edge, rosy-pink geraniums, and a black and white checked aigrette. The sunshade she has trimmed herself with frills of white gauze inside as they wear them now, and hidden the stitches on the outside by narrow rows of peacock-eye sequin trimming. An artist friend has given her a beautiful knob for the handle, painted in porcelain with a tiny wreath of flowers and dainty little figures. Will not her dress make a lovely summer costume for her to wear all through the season, as future invitations are certain for festive occasions?

I hope you will admire the present of a bedroom-wrapper that my sister and I have made for her. It is in cream-coloured flanelette with a pattern in colours, and is quite thick and warm enough to be made up without a lining. It is loose and easily put on, without looking at all floppy, and has nice large revers that we have lined with blue silk, with a bias fold sewn on and turned over the edge and hemmed on the other side. A high collar becomes her, so we have made one for her to wear when she chooses in black velvet, lined silk, and a pair of cuffs to match, with a scarf of gauze fastened in the neck that she can tie in loops or a large knot.

I have to wear my shot alpaca skirt at the ceremony and a lime-green silk blouse of last summer's, but it will look freshened by a yoke of lace and a neck ruche of mauve ribbon loops. I shall run tucks in the leg-of-mutton sleeves from the elbow to within the depth of a puff from the armhole; this will use up the old-fashioned fulness and make them close fitting, and a shaped cuff turned up of lace will make the wrist look pretty.

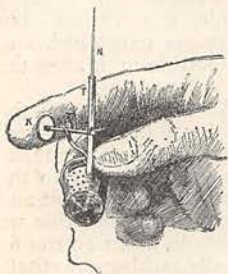
BIZZIE BEE.

Paper patterns in slight and medium size of the summer costume now ready. Price, bodice, 1s. 1½d., skirt 6½d., also of the bedroom-wrapper at 1s. 1½d.—Address, BIZZIE BEE, c/o the Editor of CASSELL'S MAGAZINE, La Belle Sauvage, London, E.C.



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 Needle Threader.

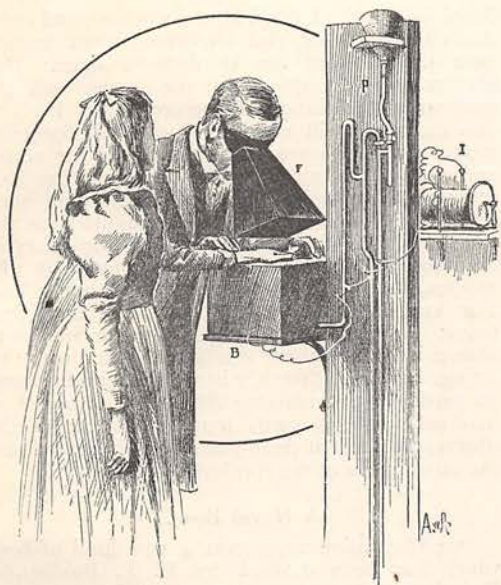


is drawn through the eye by a sliding hook inside the device, which is not shown in the illustration.

The little American device for threading needles which we illustrate will recommend itself to many. It can be fitted to an ordinary thimble by fixing it in a small hole near the bottom of the thimble as shown. The needle, N, is inserted head downwards into the tube, T, and on pressing a spring-knob, K, with the finger, the thread

The Aerodrome.

We have on several occasions referred to the experiments in flying of Professor Langley, Secretary to the Smithsonian Institution at Washington, United States, and well known for his researches into the dark radiation of the sun. For some time past he has been engaged in perfecting a flying-machine which he calls an "aerodrome," and, if the reports from America may be credited, has at length succeeded in rising to a height of about half a mile from the ground, at a speed of twenty miles an hour. The "aerodrome" is built on the "aeroplane," that is to say, the "kite," principle, which has also been adopted by Mr. Maxim. It is made of steel, has a great stretch of supporting or gliding surface, and resembles a huge bird soaring and curving in the air. It is, in fact, as we have formerly



MR. EDISON'S LATEST—THE FLUOROSCOPE.

stated, by studying the soaring of birds that the professor has attained to his present success. The motive power which drives the "aerodrome" through the air is steam, the engine being very powerful for its weight. "When the steam gave out," says our authority, "the aerodrome sank gracefully and was picked up undamaged. No passengers were carried on the trial trips," and by that we understand that no persons of any kind were on board, the machine being simply allowed to fly until the steam was exhausted. The experiments, we may add, were watched by Professor Bell, of telephone fame, who is now convinced that the practicability of mechanical flight has been demonstrated. This, however, is no more than Mr. Maxim claims to have done by his experiments, and Professor Bell is not an authority in mechanical engineering, though he did so much for the telephone. Still, Professor Langley's experiments are an advance on those of Maxim, and as such they tend to confirm our belief in the ultimate solution of the great problem of mechanical flight.

The Fluoroscope.

Mr. Edison, the great American inventor, has been working at the "new photography" with a view of finding a substance which would yield a plentiful supply of the famous "X" rays, which produce the mysterious photographs of the living skeleton and hidden objects of metallic or mineral matter. Röntgen himself observed that these invisible "X" rays were produced in the glass of the Crooke's tube, where the electric discharge fell upon it, and several experimenters have since found that various materials become phosphorescent or fluorescent in the rays, and hence that a photograph is not necessary to render them visible. In fact, a piece of cardboard coated with such a material and exposed to the rays enables one to see the Röntgen shadows of the skeleton or

some other hidden object. Barium platino-cyanide was considered the best material for the purpose, until Edison found that tungstate of calcium is several times better. He has therefore devised what he calls a "fluoroscope," by which a surgeon can inspect, as it were, the bones of his patients. Our illustration shows this apparatus and its mode of action, where F is the fluoroscope attached to the eyes of the observer. It is not unlike an ordinary stereoscope in shape, but is very light, and the bottom consists of a cardboard coated inside with crystals of the tungstate of calcium. The box B contains a Crooke's tube, which is excited by an electric induction coil I; and the apparatus P is a Sprengel mercury air-pump for exhausting the tube to the right degree of rarefaction. The "X" rays are understood to be issuing from the Crooke's tube inside the box, and passing through the hand laid upon it to the fluoroscope in which they excite phosphorescence of the tungstate coating, and thus enable the observer to see them. As they are shaded by the bones in the hand, the observer can thus in a manner look at the bones or, at all events, their shadows. In actual practice the air-pump would be disconnected from the box and its tube, so that the essential apparatus would comprise the induction coil, the box, and the fluoroscope proper. Physicians and surgeons have felt the want of a compact and portable apparatus for making their examinations by the Röntgen rays, and Mr. Edison has now provided them with one. It is the neatest and most practicable arrangement that has come within our knowledge.

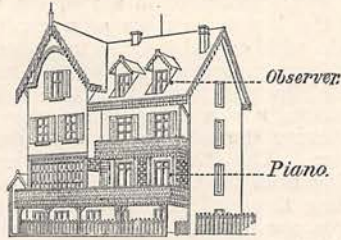
A Silk-bearing Bush.

Now that the French have taken Madagascar, there is little doubt that we shall see a variety of new commodities in Europe, and one of these will be the silk of the "vonimpanoro," a bush which bears a fibre resembling silk as the cotton plant bears cotton. A good idea of the bush will be got from our illustrations, which show the long pointed deep-green leaves, the pretty red flower, the prickly seed cases, and the raw silk adhering



A SILK-BEARING BUSH.

to the seed grains, for the purpose of wafting them on the wind to a distance from the parent plant like thistledown. The fibres are nearly an inch long, and are very fine in quality, having the yellow lustre of yellow silk. It can be collected in September, at the beginning of winter, when the seed-pods break open. Until now the Malagasy have not made much use of the silk, owing, perhaps, to the shortness of the fibres. It has

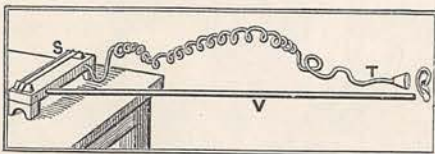


A NEW LAW OF SOUND.—FIG. 1.

been employed to stuff cushions and soften the hardness of the "filanzane," or bamboo palanquin, in which they travel long distances, supported on the shoulders of native carriers. M. George Chapin, a recent French traveller in Madagascar, is, however, of opinion that the mechanical difficulties of weaving the silk are not insuperable, and that through culture of the plant as well as engineering we shall before long be wearing the beautiful cloth of the silk bush. We may add that the process of manufacturing silk from wood, invented by Count Hilaire de Chardonnet and formerly described by us, has been introduced into England, and that a factory is to be built at Manchester. The artificial silk may easily be mistaken for real silk, and it has the advantage of washing better, taking dye better, and not blazing when set on fire. Although not so strong as real silk, it wears as well. Of course it is much cheaper than real silk, and ladies purchasing the latter had better see that they do not get the former.

A New Law of Sound.

M. Albert Lavignac, Professor of Harmony in the Conservatoire de Paris, has discovered what he calls a new law of sound which cannot fail to have an important influence on the acoustics of large halls and houses. It is that solids, such as the walls of a closed building, transmit grave sounds more forcibly than shrill ones, whereas the air in the building transmits shrill sounds more forcibly than grave ones. The consequence is a distortion of music when heard in different parts of the building. He was led to the discovery by noticing the change in a piece of music played on a piano, situated on the first floor of his house, when it was



A NEW LAW OF SOUND.—FIG. 2.

heard on the third floor, all the windows and outer doors being closed, and the inner doors leading from the first to the third floors open. Our illustration (Fig. 1) shows the house and the positions of the piano and the professor. Perhaps this discovery will explain why certain concert-rooms and salons are acoustically good for voices and not for instruments. If it be that the harmonics of the voice or instrument are of such a nature as to be differently transmitted by the walls and the air of the chamber, the tones of the voice or instrument will be altered in the process, and the true *timbre* of the sounds lost. For studying the subject experimentally, Professor Lavignac recommends the arrangement shown in Fig. 2, where S is a sonometer with two strings of different pitch, T is a speaking-tube, some 30 yards long, containing air, and V is a rod of fir-wood about 7 yards long. The ear of the observer is held at the distant end of the rod and the mouthpiece of the speaking-tube.

A Novel Boot.

Our illustration represents a new kind of boot which has been devised by M. F. Boschet, a French gentleman and amateur inventor, but which is not made for sale—at least, up to the present. We have thought the idea sufficiently ingenious to lay before our readers, and no doubt

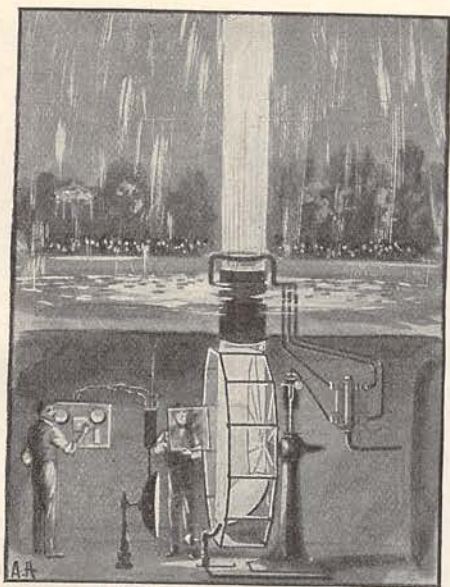


A NOVEL BOOT.

a skilful bootmaker would readily carry it out. As will be gathered from the three figures, the boot is a combination of the "lace up" and "elastic sides" pattern, and partakes of the advantages of both. Fig. 1 shows it when opened out, and Figs. 2 and 3 when laced up. In the former case the foot is simply inserted as into a slipper, and in the latter case as into an "elastic sides," the laces not being undone. This fashion allows of the front of the boot being eased over the instep, and the ankle getting a freer play. The inventor claims that by sparing the foot it diminishes the fatigue of walking to a large extent.

A New Luminous Fountain.

Many of our readers will remember the lovely plumes of coloured spray which Sir Francis Bolton created for our pleasure in the gardens of the



A NEW LUMINOUS FOUNTAIN.

Indian and Colonial Exhibition at South Kensington. His idea has been taken up in most, if not all, civilised countries, and luminous fountains are now a recognised ornament in public exhibitions, hotels, and even private houses. Our engraving shows the inner mechanism of a new and simplified type which has been invented by M. Adamoff, a well-known Russian engineer of Bakou in the Caucasus. It will be seen that the light of an arc electric lamp is reflected from a mirror, at an angle of 45 degrees, up through chimney-hole or tube into the heart of the revolving jets of water, and that the light is tinged with various colours by interposing sheets of tinted glass. In M. Adamoff's invention these coloured panes are disposed round the rim of a wheel, which is kept revolving slowly by means of a hydraulic motor, and the proper panes are inserted or withdrawn as it turns.

Orchids and Ants.

It has been observed that orchids derive some benefit from the numerous ants which overrun them in the tropics, but the precise nature of the service has remained a mystery. According to a naturalist of the Botanic Gardens in Trinidad, the ants appear to foster the growth of a fungus on the spots of the orchid, and this fungus acts as an additional source of nourishment to the plant. Certain South American ants are known to cultivate fungi for their own use, and these may unconsciously sow the seed of the fungi in crawling over the roots of the orchid. Quite recently, we may add, a variety of these fungus-farming ants was found in the neighbourhood of Washington, United States.

The Microbe of the Plague.

The source of that terrible malady, the plague, has been discovered by Dr. Yersin at Hong Kong. It is, as was believed, a micro-organism, which does not appear in the blood of the sick, but in the

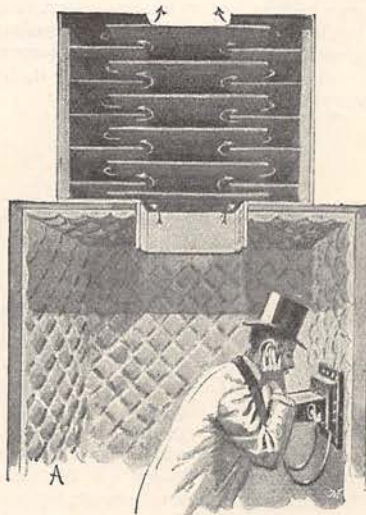
tumour which is characteristic of the disease, and it can enter the system by way of the stomach as well as by inoculation.

A Simple Stethoscope.

The ordinary stethoscope is hampered by the vague sounds produced in the air of the tube, and hence M. Zenger, of Paris, has introduced an "ellipsoidal" stethoscope which is free from that drawback. It is simply a piece of lime-wood of a peculiar ellipsoidal form, which focuses the sonorous vibrations at one end, where the ear is placed. The instrument is useful for detecting low sounds other than the beating of the heart or breathing of the lungs.

A Sound-proof Ventilator.

Telephone cabinets ought to be sound-proof and yet well-ventilated, so inventors have turned their attention to the matter both in England and France. Mr. F. Higgins has introduced a ventilator consisting of winding or zigzag passages lined with velvet for the air to enter by, and M. Menier, a Frenchman, has adopted a similar plan. His ventilator will be understood from the figure representing the interior of a telephone cabinet, with the ventilator above. The latter consists of a series of



A SOUND-PROOF VENTILATOR.

boards covered with velvet, and suspended one over the other like shelves inside a box open at top and bottom, so that the air can circulate while the sound is stopped.

An Accumulator of Light.

It is well known that phosphorescent bodies absorb light by day, or from an artificial source, and afterwards emit it in the dark; and attempts have been made to utilise them as magazines of light—for example, with "Balmain's paint," which was in vogue some years ago. M. Charles Henry has returned to this subject with a view of finding a means of regulating the emission of the light in darkness, and has communicated the results of

his experiments to the Academy of Sciences, Paris. He has discovered that intense cold prevents the emission of the phosphorescent rays. A tube containing phosphorescent sulphide of zinc, after exposure to the light of a magnesium wire, was plunged in a freezing mixture of chloride of methyl, —or of carbonic acid snow and ether—which reduced its temperature to 23 degrees and 79 degrees below zero Centigrade respectively, and the phosphorescent tube became dark. On withdrawing the tube from the mixture, it regained its ordinary temperature and at the same time its phosphorescent lustre. The experiments also showed that the emission of light was only temporarily checked by the cold, and that the full supply of light in the body was ultimately obtained from it. So far, at least, the process would be too costly for practical purposes, except, perhaps, in the polar regions where intense cold is to be had without any expense and light is a luxury during the winter.

Chone.

This is the Kanaka name for a new rubber-yielding tree (*cerbera manghas*) which flourishes in New Caledonia. It grows to a height of about 40 feet, and puts forth beautiful white blossoms. The milky juice of the tree, when evaporated, yields a black gum which is impervious to water, like gutta-percha, but dissolves in turpentine, petroleum, and other hydrocarbon essences. Leather impregnated with the gum, or cloth varnished with it, becomes quite waterproof.

AMONGST FLOWERS, BEES, AND POULTRY.

JULY.

THE great flower of the present month is the Carnation, a richly scented and coloured perennial, without which no border or bed is complete. A mass of Carnations is a picture we are never tired of; and if the plants at times behave in erratic fashion, the reward is abundant when full blossoming arrives. Early in the month put a neat stick to each flower-stem, if the flowers are wanted for exhibition—not otherwise, unless stormy weather is anticipated. Never grow calyx-bursting Carnations, if possible; even if the colouring is beautiful, the flowers have a bedraggled aspect. A neat tie with raffia is helpful when the bloom seems likely to burst, and one can also obtain cheaply small indiarubber bands made for the purpose of keeping the unruly florets within proper bounds.

Towards the end of the month commence to layer the plants. This is not work that should be left until August. The operation is simple. Scoop away with the hand the soil around the plant, so as to make a shallow basin. Into this put prepared compost—loam with a little leaf-mould and sharp silver sand—and then select the strongest shoots. Make an upward cut through a joint, to form a tongue, so to say, and peg this into the soil. A strong hairpin will suffice if there is any difficulty in procuring small pegs. Place over the

joint some of the prepared soil, and water gently. In the latter part of August the layer will have rooted, and can then be transferred into the position in which it is to bloom. When layering is postponed until the following month, the layers are not rooted in time to get them established in their flowering quarters before sharp frosts occur. Put a strong stake to every tall plant—Dahlias, for example—likely to suffer in a high wind, and carefully watch plants both in the open and under glass to prevent collapse from dryness at the root. Summer-prune fruit-trees, and keep a close watch for birds, which have many hearty meals—from bush-trees especially. Netting is one way of preserving the crop.

POULTRY in confined runs must have ample green food and the ground kept clean. Never give more food than the birds can consume.

BEES.—By the time this MAGAZINE is in our readers' hands, swarming will be in progress. If the bees upon leaving the parent hive cluster near the ground or on a low tree, syringe *very gently* with cold water, to make them cluster more closely. Then spread a cloth directly under the cluster, and at one end of it place the floor-board of the hive to receive the swarm, raising the front, by means of a stone or block of wood, about one inch and a half. If the branch on which the Bees have clustered is small, cut it off and shake the Bees on to the cloth by a sharp movement. The Bees, falling in a heap, will quickly regain their feet and run into the hive.

SNAP-SHOT PHOTOGRAPH COMPETITION.

THIS Competition has not been so productive of good work as former Competitions of this character; and the Adjudicator is of opinion that not one of the prints sent in is worthy of a First or the Second Prize, offered under our number. The first Prize has, therefore, been withdrawn, under the provisions of clause 6 of the General Regulations governing the Competition, and the Second Prize of £3 has been divided between the following two competitors in proportions named:—

TWO POUNDS (£2) to

WALLACE HEATH,
Elmfield, Shrewsbury;

ONE POUND (£1) to

C. F. INSTON,
25, South John Street,
Liverpool.

Unsuccessful competitors are reminded that their work will be returned on receipt of application (accompanied by postage) within one month of the publication of this Award.

The MSS. in the Serial Story Competition (which closed on June 1st) are now under consideration, and we hope to publish the Awards in our next issue. Meanwhile, we would remind our readers that the "Summary" Competition (which full particulars were given in the December number) closes on July 30th.