THE CHILD AND THE MAN.

A CONTRAST.

A LOVELY child is playing on the strand,
Where the glad ocean sends its rippling waves
To wash with silver light the golden sand
Of Naples; with delight he laves
In fearless, joyous revels, in the sea—
Like a young Cupid suddenly set free
From Venus' shell.
A painter wanders down
To that same strand: a man whose high renown
Was soon to add to fair Italia's glory,
And live for ever in this world's grand story.
Struck by the wondrous beauty of the boy,
The painter limned him: such a face of joy
And innocence angelic, ne'er before,
Either in dreams, or on the sea or shore,
Had risen like a vision on his sight
To fill his soul with exquisite delight.
The vision—like a vision—passed away
Save for the picture painted on that day,
Which in his studio evermore remained,
And for which golden offers were disdained.

* * * * * *

Years chased each other o'er the sands of time;
The world-worn painter sought another clime,
For through his far-famed life a mystic yearning,
Though often quelled, came evermore returning—
The strong desire to find in some strange land
A contrast to his picture.
'Midst a band
Of outlawed murderers at length he found
One—chained—awaiting death; upon the ground
The creature writhed with fierce and fiendish rage
Like a wild beast sore-wounded in a cage;
With blood-shot eyes, blurred, sensual, hideous face—
With form distorted—without shame or grace;
The wretch blasphemed his God, and cursed all men.
Here was the contrast found indeed; but when
The painter, tracing back through that foul life
Of degradation, vice, and deadly strife,
Unravelled with a sad and wondering awe
That his fair angel of the sunny shore
Was now the criminal whose latest breath
Cursed God and man—unfit for life or death—
His heart was touched with such a shock of pain,
That on this earth he never smiled again.

W. A. GIBBS.

THE GATHERER.

Profitable Philanthropy.

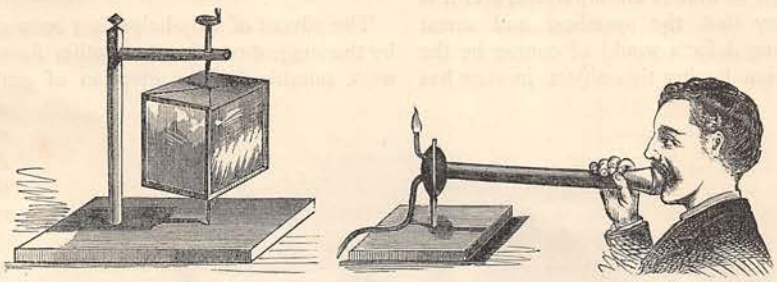
From a report issued by Consul-General Playfair, it seems that in Algeria an opportunity is now afforded to any enterprising capitalist to make a very profitable investment, and at the same time be of vast service to the country in general. It appears that, in consequence of the gradual destruction of the scrub and forests in Algeria, the climate is changing to an appreciable degree every year. The wood, which formerly acted as a parasol to the earth, preventing undue evaporation, and which attracted and condensed the moisture in the atmosphere, causing it to descend as rain, has been disappearing since 1845 with ever-increasing rapidity. The rainfall has as swiftly and regularly been diminishing year by year, and the question of replacing the forests is now becoming an all-important one. If this is to be done by planting oak, ash, or other slow-growing trees indigenous to the country, some time must necessarily elapse before any tangible results can be expected, and the capitalist who plants them can scarcely expect to get any return for his outlay during his lifetime. But it has been proposed to plant Australian trees, and more particularly the eucalyptus, which grows as freely in Algeria as in its native country, and in the culture of which the capitalist "may expect to cover his expenses in ten or twelve years, and after twenty or twenty-five to obtain as great results as could be realised by oak-forests of a century's growth." After six or seven years in Algeria, the eucalyptus attains the dimensions of a twenty-year-old oak, and in twenty years furnishes grand logs for ship-building and other purposes. An acre of land planted with this tree would, it is said, during twenty years bring in to the capitalist at least four times as much profit as when planted with cereals. According to published statistics, a hectare of land (= nearly 2½ English acres) planted with cereals and eucalyptus would yield in twenty years 5,000 and 20,000 francs profit respectively; while a hectare planted with oak and eucalyptus would produce in 100 years respectively 47,235 and 186,800 francs profit. Here is an opportunity for a capitalist who can wait for the return of his money!

We have already had occasion to call attention to the action of the eucalyptus in improving the sanitary condition of unhealthy districts, and in destroying miasmas; and when its value in this direction, coupled with its influence on the climate of the country, are considered in relation to the profitable aspect of its growth, surely French capitalists will not be wanting, who, while benefiting themselves, may earn the title of benefactors to the country.

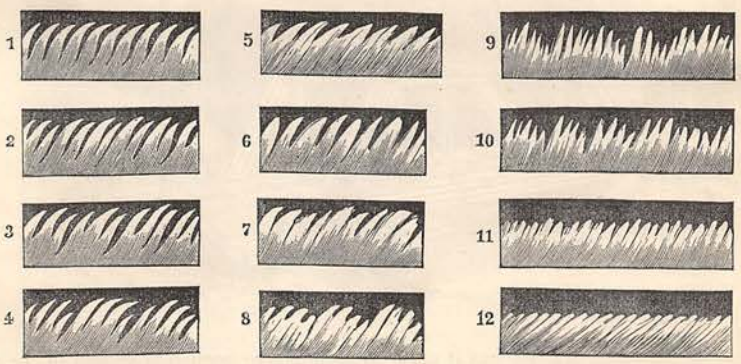
Photographing a Sore Throat.

If, when sitting at table, a ray of the sun should chance to fall upon the polished blade of a knife,

a spot of brilliant light will be reflected upon the ceiling, and the slightest, most imperceptible motion of the blade will cause it to dance up and down in an exaggerated manner, one-eighth of an inch inclination of the knife sending the spot three feet or more. This trick was played for the amusement of children for many generations, without a suspicion of the extraordinary part the principle would perform in modern science. First, the delicate and faint vibrations of a tiny mirror, put in motion by the electricity enfeebled by passing along the three thousand miles of the Atlantic cable, spelt out the message by reflecting a beam of light in precisely the same way as the dinner-knife. Now, we can see right down into the cavity of a man's chest, and watch his words, as he speaks, write themselves before our eyes, and actually tell us, by the style and character of that writing, the healthy or diseased condition of his lungs and throat! This wonderful thing is done with beautiful simplicity by the instrument here represented.



APPARATUS.



PICTURES OF FLAME REPRESENTING HEALTHY AND DISEASED VOICES.

The person whose throat and vocal organs are to be tested, speaks or sings into a mouth-piece as into an ear-trumpet. At the end of this is a double tube, divided by a thin membrane of flexible india-rubber, and the sound passes up one side of this, while on the other gas flows upwards to a small burner. The alternate expansion and contraction of the air upon one side, caused by the voice, makes the membrane to shake or vibrate so as to interfere with the flow of gas on the other side. When the pressure is slight, the gas goes up quickly; when greater, the quantity is diminished, and consequently the flame of the burner now rises and now falls. The light from this jet strikes upon a four-sided mirror revolving, which throws the beam upon a screen, and so makes a very faint motion perfectly visible and distinct. The revolution of the mirror causes the spot to appear spread out as a band of light with a jagged or saw-like edge; and the greater height or regularity of these teeth is found to correspond with the tone of the voice. Under ordinary conditions the flame-picture of the voice produces bands, as shown here; according as the notes are high or low. A good singer's voice gives a series of specially clear teeth in the picture. The next set represents hoarseness, and the saw-like edge is rough and imperfect, and the teeth are not so clearly cut. The third exhibits the reflection corresponding to the greater degree of hoarseness caused by disease of the lungs or serious inflammation. The last, where the flame-teeth have almost disappeared, shows a state of the vocal organs when they are nearly immovable, and the breath passing through scarcely causes any vibration. The instrument is a modification of Koenig's flame manometer, and by its aid a man's own voice writes upon the wall, in letters of light, the state of his lungs and throat.

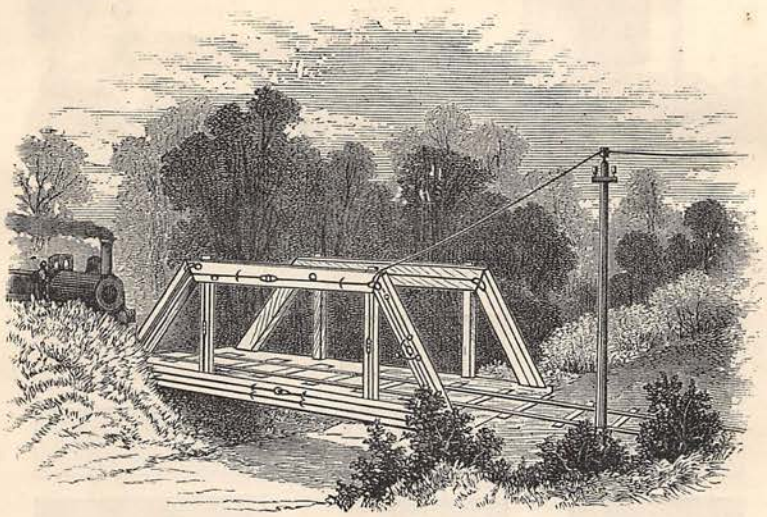
Farming in Worms.

Men who are great at catching fish are generally bad hands at that necessary preliminary—fishing for worms—and they will doubtless be very glad to hear of an entirely new industry, that of collecting, breeding, and rearing worms. A worm farm has been carried on in Nottingham with great success, and this is the way it is worked:—Every favourable night, that is when the ground is wet, several men are sent out into the pastures and meadows of the neighbourhood, and in a single night between 3,000 and 6,000 worms of various kinds, such as the cockspur, the lob or dew-worm, and ring-tailed brandling, are caught. The worms are sly animals, we are told, and the men have to be very cautious, for on hearing the slightest footstep, they are apt to pop back into their holes.

The worms are brought home and placed in properly selected field-moss. A newly caught worm is very tender and delicate, and easily breaks up when attached to a hook, but when the farmer has properly educated him he is as tough as a piece of india-rubber. Worms cannot be kept longer than a week, as a rule, so before that time the farmer packs them up in light canvas bags and sends them to market, where they are sold by the thousand or the quart.

Electrical Test for the Safety of Bridges.

The old proverb about locking the stable-door after the steed has been stolen, obviously suggests the advisability of securely fastening the place in future, but the tardy prudence thus implied is surely better than indifference and neglect. Recent bridge accidents, in this and other countries, have raised the question of remedy or prevention. Was it possible to devise some means by which it could be promptly ascertained when a bridge was being subjected to a strain greater than it could bear, or, from other causes—such as the subsidence of ground, displacement of stones or bricks, &c.—was becoming a source of danger? In such a problem the element of time is all-important, and it is unnecessary to say that the speediest and surest method of indicating defects would of course be the best. One invention having this object in view has already been patented by Mr. John Forbes, of Dartmouth, Nova Scotia; and it may be described, for want of a conciser term, as an "electrical apparatus to indicate overstrain or weakness in bridges or other structures." We have not heard that the apparatus has yet been in actual use, and we cannot therefore speak definitely to its practical utility; but it may be presumed that Mr. Forbes had his invention experimentally tested before patenting it in America. The *modus operandi* is briefly as follows, and our illustration will help to elucidate the text:—To each member of the bridge an insulated wire or conductor is attached and so arranged, by any convenient mechanical means, that an electric current may be made or broken. This latter result will ensue upon the first signs of excessive strain, or upon impending dislocation of parts of the structure—the sensitive mode of communication being susceptible to the slightest movements in the various members of the bridge—so that there would be time with due diligence to take the proper precautionary measures. The closing or rupture of the circuit would discover itself by an indicator operated upon by the electric current from a battery through electro-magnets suitably arranged. The magnets should be so adjusted that, as in the case of hotel and office bells, a number would be immediately exposed corresponding to the particular part of the structure affected.



Whether or not the apparatus can be beneficially worked we are unable to say, but it would appear to be more adapted to bridges on which the traffic was confined to carts, carriages, or pedestrians than to railway bridges, where the speed of the train might prevent the driver from noticing the warning signal, or, if he should happen to notice it, from pulling up in time to avoid a disaster. It ought to be added that the inventor claims for the system that it can be applied with as much advantage to roofs, &c., as to bridges, and it seems to be tolerably clear that if it should be efficacious in the one kind of structure it should be so in the other also.

A School of Dressmaking.

The advent of lady-helps has been closely followed by the suggestion of various other forms of industrial work suitable for the adoption of gentlewomen who are reduced in circumstances. Amongst these the best is certainly that of dressmaking—an art which is invaluable at home, and likely to prove most remunerative when practised in this manner. Workrooms, where ladies with no talent for either teaching or "lady-helping" may learn the business of dressmaking, have been established in the metropolis under the auspices of an association which combines embroidery with dressmaking. The two departments work most harmoniously together; for many ladies who found it impossible to learn the art of making dresses succeeded admirably in fine-art embroidery, now so much used to ornament them. The school was at first designed to give employment to a class of middle-aged ladies who had failed as governesses; but this plan was not found to answer, as they could not adapt themselves to the requirements of trade-work. The institution is now a training-school for girls—daughters of clergymen, professional men, and others—who can give some months of their time for free instruction, and afterwards remain as workers at a salary. Lessons are also given in the workroom, and weekly classes held for the instruction and benefit of amateur dressmakers. The experience of the new school of dressmaking will probably be of value to other schools with reference to the difficulty of training middle-aged ladies to punctual and business-like habits—a difficulty always much in the way of those charitable people who, in pity for their necessitous

condition, try to assist them. Good dressmakers command very high salaries, ranging from £50 to £300 per annum, at the first-class establishments in London, and even in the colonies; and there seems no reason why these excellent positions, affording both a comfortable home and good pay, should not be opened to gentlewomen when properly trained and qualified at a regular school.

The training has hitherto formed the difficulty, as the uncongenial atmosphere of ordinary houses of business was not suited to girls of gentle birth and position. With schools of fine-art needlework, cookery, and dressmaking—not to speak of training-colleges of all kinds—we shall surely soon educate the superfluous unmarried female part of our population to earn their living with ease.

Answer to Double Acrostic on page 702.

CELIBACY—MARRIAGE.

C a M
EleutheriA
L ea R
I ste R*
B rindis I
A rmad A
C han G†
Y uletid E

Shakespearian Acrostic.

A noble lady born to high estate,
Who conquering others forged herself a fetter,
And did for aye this truth enunciate—
Love sought is good, but love unsought is better.

I.

A matron sore beset by fate,
Which placed her in this grievous strait,
That if her husband's cause she'd bless,
She wished her brother non-success.

II.

A pert and pretty waiting-maid,
Who 'mid Love's mazes lightly stept,
And planned, advised, all counsels gave,
At woman's reasons an adept.

III.

An old-time daughter of these sea-girt isles,
Who passed through darkest griefs to brightest smiles.

IV.

O strong and valiant woman's heart!
O Love, how mighty is your spell!
Enabling her to plead and woo
So well for him she loved so well.

V.

Oh, hardly tried! Oh, fair to see!
A white-robed queen of purity.

VI.

A wife whose husband had a counterpart,
As like as two peas are to one another;
Much mischief thence ensued, much grief of heart,
Till each alike to each was provèd brother.

W.

* Grecian name for Danube. † The Siamese Twins.

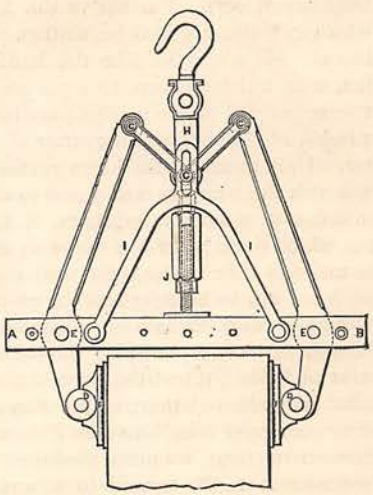
Post-Office Wonders.

During last year more than 33,000 letters were posted without any addresses whatsoever, and about 2½ per cent. of these contained cash, bank-notes, or cheques. During the fifteen months ended 31st March last, 5,897,724 letters were received in the Returned Letter Office, giving an average of nearly 1 in 200 of the whole number of letters; of these, however, nearly nine-tenths were either re-issued or returned to the writers.

To Builders and Others.

The hoisting up of heavy building-stones is a difficult and dangerous work, and woe betide the workmen if the crane is unsafe or the stone is insecurely attached to the machine! Here is an ingenious invention which will take away all such danger, and obviate the necessity of ropes and other appliances for the safe fastening of the stone before its elevation. The principle of the apparatus is to make the weight of the stone itself act in such a manner upon levers as to force for itself a tight grasp by the arms of the machine.

C D and C D are the arms, which are pivoted at E in the piece A B. The clamps F are attached to the lower ends of these arms, and short arms rising from the point G are pivoted to the upper extremities in the vertical piece H. To the latter is secured the hook; J is the screw which, when the machine is working, serves to elevate the point G. This is the manner of using the apparatus:—The clamps are placed on

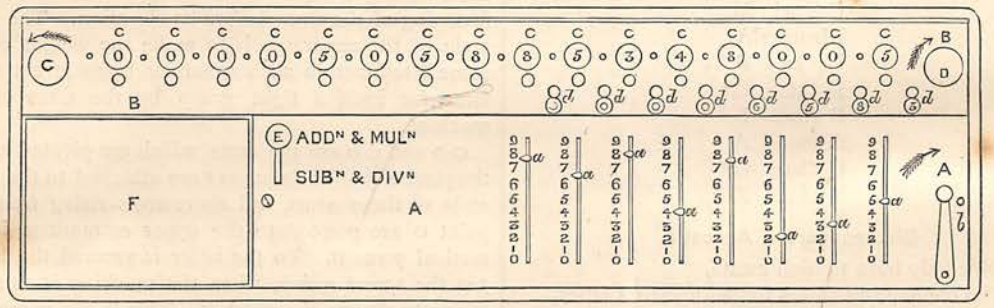


the sides of the stone, and the screw J is then in working action. The outer ends of the arms C D and C D are thus forced apart, and the clamps pressed against the block. When the hoisting clamp is lifted at the hook, the arms C G and C G open, and the weight of the stone itself causes the grip of the clamp to be increased in power. The holes seen in the piece A B serve to adjust the pivot points E of the larger arms to any size of stone.

A Calculating-Box.

The machine represented in the engraving is the invention of Thomas de Colmar, and has for some years been pretty extensively employed in professions in which long and tedious calculations require to be made. The illustration shows only the lid of the machine; the complete article resembles an ordinary musical box, so by adding four inches or so of depth to the engraving, the reader will form a good idea of what it is like. Six slits will be observed in the lower part of the machine, and against each of these is engraved a series of numbers, 0 to 9. In each slit moves a button, which can be placed against any one of the engraved numbers. A regulator or reversing handle will be observed to the left; this is set against the words "Addition" or "Subtraction," according as we are about to proceed with the one or the other. This of course includes multiplication (which is nothing but a species of addition), and division (which is just subtraction long drawn out). Farther to the left is a slate on which calculations may be written. To the right of the slits is a handle, like the handle of a barrel-organ, with which answers to sums are ground out. In the upper part of the machine are two series of circular holes, each hole about a quarter of an inch in diameter. Underneath these holes revolve discs, marked each with the numbers 0 to 9, and so arranged that one number at a time is exhibited in the hole. The plate in which these holes are found is movable, and can be made to slide to the right, so that any one of the upper holes can be brought into the units' place.

The method of working is thus explained by a Fellow of the Society of Actuaries: "Suppose we call the top series of holes S1, and the lower S2, and the slits or numbers indicated thereon F. Any number not exceeding six figures is indicated on F thus:—Suppose the number is 57,091, we move the button on the first slit opposite to 1, the second to 9, and so on. Now, if the handle is turned *once*, 57,091 appears in the upper series of holes; if *twice*, 57,091 by 2, that is 114,182, appears in S1. On S2 are registered the number of terms. If we wish to multiply by a number higher than 9, say 24, we first multiply by 4, then slide S1 one place to the right and multiply by 2." The operations are performed with ease and rapidity. On machines like that shown in the engraving, sums of six figures multiplied by six figures are answered as if by magic. Would it not be an excellent companion in the parlour, to assist in making up housekeeping books?



In Local Museums.

All know what local museums are, as a rule. Take a stuffed crocodile, a couple of ostrich-eggs, a cocoa-nut, a Chinese idol, a piece of coral, a New Zealander's war-club, a death's-head moth, a case of butterflies, some specimens of minerals, and a speaking trumpet—there you have a local museum of the ordinary type. Now, how much better it would be if such institutions, instead of trying to collect curiosities and natural history specimens from distant parts of the earth, would confine themselves to their own doors! What a field of usefulness they would then occupy! There is hardly a neighbourhood that has not a wealth of objects of interest capable of being stored in museums. In zoology, botany, and mineralogy, quite enough might be found to form a valuable and instructive collection. Such museums would, of course, depend to a very great extent on the personal industry and public spirit of local collectors; but there are always some in every town interested in natural history, and we dare say willing, if the thing were put before them, to give some energy to so good a work. The first object of those who would establish a museum should be to find a number of such collectors, each of whom would take up a branch or two of a subject, and work these out as well as circumstances permitted. The next object should be to attract the attention of the inhabitants to the value of the museum by any available means; and then, if a recognised scientific man could be persuaded to direct the labours of the committee in arranging and classifying the specimens, success would be certain. Some of our best provincial museums have started in this way, and have gained a well-deserved reputation through the energy of a few local enthusiasts.

CASSELL PETTER & GALPIN, BELLE SAUVAGE WORKS, LONDON, E.C.