ELECTRICAL TERMS.

A Lucid Explanation of the Laws of Electricity.

Probably few people when turning on a water faucet in their house, or playing a hose in their garden, ever realize that the laws controlling the flow of water have a great similarity to those governing the subtler fluid, electricity; and whether they turn on a faucet or an electric light certain conditions exist and certain actions follow which are analogous.

The water in the faucet is under a certain pressure, and an amount of water flows out of the faucet dependent upon this pressure and upon the size of the faucet.

An electric current in a wire is under a certain pressure, and an amount of current flows through the wire dependent upon the pressure and upon the size of the wire.

In a garden hose, water under good pressure, if allowed to escape through a small nozzle, will be forced a considerable distance. In an incandescent lamp, current under a fair pressure is allowed to escape through the minute filament of the lamp, heats the filament to incandescence and throws out beams of light. Not that electricity is a fluid in the sense that water is, or that there is any actual transference of matter when current passes through a wire, as there is when water passes through a pipe; but there is a close analogy between the laws governing the two, and it is just as easy and as simple to predict the actions of one within a certain range of conditions as it is of the other.

The great trouble has been that electricians have thrown a veil of mystery over their calling by naming all their units after French and German celebrities. This has led to no end of confusion. Volts, amperes, ohms, watts, joules and coulombs are becoming common words in print in these days of great electrical activity, but they express about as much meaning to the average person as a Chinese laundryman's sign.

Pounds, quarts and the rest of our everyday units of measurement are familiar to every school child; as will volts and amperes be some day when the American people are better acquainted with the doings of these distinguished foreigners and the units their names now represent.

Alexander Volta was a professor of physics in Pavia who accomplished a great deal in a scientific way. Consequently electricians not only erected a marble tablet to his memory but agreed to name the electrical pound per square foot after him and so the unit of electrical pressure is the volt. Similarly we are compelled to write our electrical gallon with an accent over the last syllable of ampere. Ohm has had his name used as the unit of electrical resistance ever since he gave to the world his celebrated law on the flow of current. Ohm said that the amount of current going through a copper wire was proportioned to the pressure under which this current worked and to the size of the wire.

This is not very different from what anybody's common sense would see was true of water flowing through a hose. The amount of water is of course proportioned to the pressure under which it works and to the size of the hose. Ohm made a great reputation on this discovery, and since his time other people have been finding out that what is true of water is also analogously true of electricity. Look at an electrical road! A wire carrying a current is stretched through the air and all a man has to do to move a car containing 100 people along a street is to connect the car machinery with the wire by a pole.

If the wire was a pipe carrying water under a considerable pressure and this pipe could be connected to the car by a movable hose, a water motor would make the car move just as the electric motor does, and moreover, the water would flow through the pipe, the hose, and the motor to the ground, falling from a considerable pressure to zero pressure just as the current flows through the wire, and the trolley arm and the motor to the ground falling from 500 volts pressure to zero pressure or potential as it may be called, which is the potential of the earth just as the zero potential of water is the sea level. Moreover, as a certain number of gallons of water will flow through the pipe, the hose and the motor, dependent upon the size of the pipe, the hose, and the motor and the pressure of the water, so will a certain number of amperes of current flow through the trolley wire, the trolley arm and the motor winding dependent upon the size of the wire in them all and the electrical pressure of the current.

A line of electric arc lights are made to burn by inserting them one after the other in series in a line carrying current of a high pressure, and the passage of the current through each light uses up a certain percentage of this pressure just as a series of water wheels may be introduced in a brook or a river where each wheel will similarly use up a certain amount of the pressure of the running water.

Incandescent lights are burned without affecting the pressure in two wires run parallel to each other by connecting the two terminals of each lamp to the wires and allowing the current to pass through their filaments, just as two water pipes running parallel to each other may be punctured with small holes wherever it is desired to have the currents of water escape. In a motor the pressure can be diminished at any point, except by an inconsiderable amount due to friction, though a large quantity of water or electric fluid will be used.

A man's body offers a resistance to the passage of an electric current dependent upon the muscular and nerve fibres of the body, the thickness of his skin and the conditions under which the current enters and leaves his body. This resistance depends, therefore, upon three variable factors, and therein lies the uncertainty of "electrocution." A man's ability to withstand the effects of a waterfall depends similarly upon the strength of the man and the point of application of the water's force.

THE ANTIQUITY OF BEER.

It Was in Common Use in Many Ancient Countries.

Hecataeus, one of the very earliest of Greek historians, who wrote five hundred years before Christ, mentions that the Paeonians or ancient inhabitants of Macedonia, a country which bordered on Thrace, drank Bruton made from barley, and Hellanicus (B. C. 466) speaks of a race of men who drank beer made of roots, just as the Thracians did that made of barley.

Aristotle mentions barley beer under the name of pinon, and observes that it had such a stupefying effect on those who drank it that they fell on their backs and lay face uppermost!

During the latter days of the Roman Empire wine must have been nearly as plentiful as water in Southern Europe, nevertheless malt liquor formed the staple drink of the country folk throughout the district: situate between the Adriatic and the Danube. Thus, when Valens, first Emperor of the East (Constantinople) and a native of Pannonia, was besieging Chalcedon, the men on the walls amused themselves by roaring out at him "Sabaiarius!" which is equivalent to "beer bibber," or, perhaps, our old English word "ale draper." "Sabai," explains Ammianus, to whom we are indebted for the narrative, "is a poor sort of drink in Illyricum, consisting of barley or wheat converted into liquor." As a curious instance of how history repeats itself, we may observe that, a thousand years afterward, the French of Pontoise are represented in a poem as addressing similar taunts to their English besiegers: "Anglois et Normans, retournez a la cervoise!" (Go home to your beer!) Priscus, the ambassador of Theodosius the younger at the court of Attila the Hun, in Pannonia (a district bounded on the south by beer drinking Illyricum, and on the north and east by the river Danube), relates that when traveling in that country he was furnished by the villagers with what was locally termed medos (mead) instead of wine, while his servants were supplied with a drink made from barley, which the barbarians called kamon (ex Historia Gothica, page 183), and Dion Cassius, who was legate in the same country two centuries previously, has recorded the fact that the Pannonians ate and drank barley."

The Egyptians too, were well known to the ancient inhabitants of Greece as brewers and consumers of beer. "They grind barley and make it into drink," writes Hecataeus. In the 'Suppliants' of Æschylus (B. C. 484) King Pelasgus says in a scornful tone to an Egyptian herald: "You will find the inhabitants of this country (Argos), let me tell you, men and not drinkers of barley wine."—[The Gentleman's Magazine.

Electrical Progress.

A most remarkable discovery adapted to a wide field of usefulness is reported. The inventor is one Tesla, a young Montegrin, who has lived some years in this country and been an enthusiastic student of electrical laws and phenomena. If the reports are to be credited he has discovered some method of carrying the electric current from one point to another without any conductor. In an experiment conducted before some of the leading English scientists he stood between two plates, one on each side of a room, which were connected not with one another but with a battery which supplied electric waves which are described as "nearly identical with light waves." No connection exists between the plates. When the current is turned on the experimenter holding an incandescent lamp shows that there is a passage of the current between the plates through the atmosphere because the lamp becomes lighted as soon as it comes into the line between the plates. In another experiment he causes the current to pass through wood or brick or stone as light passes through a window pane.

Thus far the experiments have been made simply to satisfy the studious and curious; but it is not difficult to see that if there is no deception the new discovery has an enormous commercial value. As the current passes, it is said, without any obstruction through the densest fog it would be invaluable as a means of signalling at sea.—[Detroit Free Press.

How Men Fall When Shot.

The manner in which men fall depends also upon the nature of the action in which they are engaged. Nearly every one is familiar with the traditional stage fall, where the victim of a supposed death-shot strikes an attitude, clasps his hand to his heart, stiffens every joint and muscle, breathes hysterically, and goes down like a log toppled over from one end. Another popular yet erroneous notion is that men shot through the vitals leap into the air and go down in a dramatic attitude. Sometimes men are found on the field in striking positions, but often an examination shows that the position was taken after the fall. As a rule, a man who is hit above the hips goes down. The slighter the wound the more commotion, for the body instinctively resists, just as it does when one slips or is pushed or collides with some object. But a wound in a vital spot weakens the resistance, and men sink at once, or reel and tumble with very little self-control.—[Popular Science Monthly.

An Indian man has been fined $1 and costs for shooting a man with intent to kill.

FOR THE LADIES.

A REMARKABLE WEDDING DRESS.

When Mdlle. Morosow, of Russia, married, some few months ago, her father's friends and pupils devised a wonderful gift for the beautiful young girl. It consisted of probably the most remarkable wedding dress ever made. The foundation was of white satin and covered with small paintings, all in miniature, of allegorical subjects dealing with love and matrimony. This garment has been, it is hardly necessary to say, very carefully preserved, and would prove an addition to any art gallery, as it comprises the work of the most celebrated Russian artists.—[Pittsburg Dispatch.

NEW USE FOR ESCORTS.

Every woman who wears the trailing skirt knows how very difficult it is to button the gloves if the toilet has been hurried and necessitated this last function being performed in the street, without letting the gown drag on the ground. If the material is delicate in hue or texture it is ruin to even go a few paces with it sweeping up the dirt of the sidewalks. A young girl and her escort created considerable amusement the other evening by walking down Chestnut street, he holding up her gown while she struggled with a refractory glove button. It was very funny, but one could not help admiring the ingenuity of the girl and the chivalry of the man.—[Philadelphia Times.

SOOTHES THE ACHING FACE.

Every woman knows the aching face and neck generally brought home from a hard day's shopping and from a long round of calls and afternoon teas. She regards with intense dissatisfaction the heavy lines drawn around her eyes and mouth by the long strain on the facial muscles, and when she must carry that worn countenance to some dinner party or evening's entertainment it robs her of all the pleasures to be had in it. The sponge and hot water represent the latest remedy in vogue. Bath the face in water as hot as it can possible be borne; apply the sponge over and over again to the temples, throat and behind the ears, where most of the nerves and muscles of the head center, and then bathe the face in water running cold from the faucet. Color and smoothness of outline return to the face, an astonishing freshness and comfort results, and if followed by a nap of ten minutes all traces of fatigue [illegible].—[New York Advertiser.

[illegible] LUCKY BELLS.

The latest fashion in bridesmaids' presents is the Campanella Margherita, or bell of fortune and it rings from every imaginable bit of jewelry to-day. Bracelets, pins, hairpins, garter buckles, watch chains, all and each afford a resting place for these tiny tinkling things, which, by the way, are said to frighten off all manner of evil spirits, and are by some devout believers supposed to insure health, wealth and success in love matters.

They are like ragman's bells or the bells tied to alpine cattle, square in shape, with long tongues. The mysterious little tinkling noise heard whenever there is a girl around can now be accounted for, for she who does not own and wear a lucky bell is either very unfortunate or unsuperstitious, and what girl but has her own little pet superstitions, especially if she is pretty. Plain girls never take airs of this kind; they know better.—[New York Press.

ALPINE HATS A FAD.

The alpine hats have become a genuine fad. The craze for them is growing epidemic, and they are being brought out in all materials. The silk ones are so high-priced, selling as they do at $3.50 and $3.75, that they will not be as generally worn as they deserve to be. Some of these are the high crown alpine, with a shallow dent across the little top crown, and are banded with ribbon, with a bow at the side; others are low and broad, with a puff of the silk in front. The stitching is in close rows. Cotton bedford cord is made into a rather round alpine, with the crown in gores, like the crown of a jockey cap. The price is $1.50. It is in light colors, banded with black galloon. Similar hats are of cloth and storm serge. Caps of cotton and heavy wool bedford cord are innumerable in variety.

Straw alpines and sailors are banded in narrow leather straps fastened at one side with a buckle. Two or three straps are on one hat, or perhaps two of leather and one of velvet, the latter finished with a tiny flat bow. The edge of the alpine brim has a roll of velvet inside. These leather strapped hats will correspond with the blazers that are caught together in front with a leather strap and buckle. Yellow straw alpines have a band of four-inch black velvet that almost covers the crown.—[New York Times.

THE MOTHERS OF GREAT MEN.

A great deal has been written about "the Mothers of Great Men." We imagine, however, that the folk of Leonberg, in Wurtemberg, have started a precedent by erecting memorials to a series of mothers of great men. This little township of about 2,000 inhabitants was the birthplace of Paulus, the famous Rationalist theologian, of Schelling, the equally famous philosopher, and of Hochstetter, the naturalist. It was also the dwelling-place of the mother of the poet Schiller from 1796 to 1801, and of the mother of the astronomer Kepler two centuries earlier, though three villages in the neighborhood contend for the honor of having been Kepler's birthplace. The town council of the "Town of Mothers," as it proudly calls itself, has affixed tablets to the walls of the old castle of Duke Ulrich the Well-beloved, where the Magna Charta of Wurtemberg liberties was signed by the Duke, in honor of the mothers of the poet and the astronomer. We presume that the patriotic town councillors will not stop short at these two honorable women, but will extend similar tokens of respect to the other mothers of whom they are so justly proud.—[Pall Mall Gazette.

FASHION NOTES.

Gloire de Dijon glass is exceedingly charming.

The pink speckled lily has become a social favorite.

Bedford cord, as a fashionable material, is having a run.

Crepe-veiled jewelry, a mourning fad, become the fashion.

Such a variety of straw hats for women nobody ever saw this side of dreamland.

Every other woman carries a gossip bag these days, albeit there's "nothing in it."

All the colors of the rainbow are introduced in the new awnings for country houses.

A feature of dress bodices this season can be epitomized as a "mass of embroidery."

Diamonds among the socially elect are much more appropriately worn than heretofore.

You can never convince a woman that a big hand squeezed into a small glove looks badly.

The fad for oddity in fashion continues to rage and is encouraged by leading modistes.

The silk petticoat for full dress should be cut with the bias seam in the back like the dress, and trimmed with one deep flounce with narrow Russian lace on either edge.

The round waist of nainsook has the low yoke formed of lace insertion. Narrow ribbon is run through the insertion and tied in front. The arm hole is finished with three rows of the insertion.

A pretty novelty on hats and bonnets is the double thistles made of jet and black lace, which are set on in aigrette form, one thistle rising above the other. They are quite effective if one can rid the mind of their being too unreal to be artistic, a black thistle being as abnormal as a blue carnation.

The old fashion combs of our grandmothers are again in vogue. They are high in appearance and price, being made of gold and tortoise shell. Daggers are also worn, and fine gold hairpins are much in favor. Ribbon is used extensively as a decoration for the hair, coming in tiara, bows, etc.

The clinging close fitting style of dress is still to be worn, and the new goods are to be soft, pliable, and have a glossy surface. A mixture of silk and wool will be used; also Bengaline and fancy silks, which are spotted, striped or slightly checked. Others have a shaded ground, with bunches of flowers scattered over.

Several leading dry-goods houses in New York are again making for the summer a specialty of the sale of simple and stylish ready-made walking-skirts, the bodices of which can be quickly made of like fabrics, or be worn with a pretty skirt waist, and a jacket of some material harmonizing or contrasting with the skirt.

The wild-flower hat is the fad of the summer girl. It is large and bendable, with the entire brim formed of green leaves. The crown is a mass of wild flowers, dainty, delicate little blossoms of the wood, which are also strewn along the leafy brim. The inside of the brim is lined with a shirring of crepe the same shade as that of the flower forming the hat.

Gaze de Chambery is coming into use again. It is of soft, supple texture, exquisite in its colorings, and falls in graceful folds about the figure. Some of these gauzes have a woven band of stripes along the selvedge. With tulle gowns, gauze wraps, chiffon-trimmed hats, and transparent parasols the summer girl will be a dream of ethereal beauty.

An improvement in the summer girl's wardrobe is the substitution of the becoming frill to the skirt instead of the mannish tie. For an altogether simple toilet what could be "neater and completer" than a dark blue, perfectly fitting serge skirt, fastened with tiny round crochet buttons in front, worn with a pale shell pink gingham waist with its full, dainty ruffle?

England's Youngest Soldier.

The youngest soldier in the British army, Private Defries, aged 14½ years, is a fine child for his age. He is close upon 5 feet 5 inches in height, with a chest measurement of 33 inches, and weighs 126 pounds. It is no wonder, therefore, that the military authorities should have enlisted him without a demur when he told them that he was over eighteen. His father now seeks to have him discharged on account of his tender years, but the war office, not unreasonably, holds that the onus lies upon him to prove that his son is the lusus naturæ he would make him out.—[Boston Transcript.

Drove Wild Geese Like Rabbits.

During the late storm a wholesale slaughter of wild geese took place up at Big Bend. It was very soggy one night and thousands of geese lit in the vicinity, and the fog being thick they could not see, and several parties went out with clubs and in less than an hour had succeeded in killing an even 5,000 of the birds.—[Redding (Cal.) Democrat.

BLEW UP HIS OWN COTTAGE.

He Was Only a French Soldier, But He Obeyed Orders.

The story is told in a French newspaper of Pierre Barlat, a poor laborer who lived at Sevres, near Paris, with his wife, Jeanne, and their three children. Industrious, frugal, knowing nothing of the way to the wine shop, Pierre saved all his spare money, working harder and harder, and at last bought the tiny cottage in which they lived. It was a tiny cottage, indeed built of stones, with tiled roof, standing amid shrubs and covered with clematis. It always attracted the eye of the traveler, on the left, as he crossed the Sevres bridge.

Pierre and Jeanne worked and saved until the little cottage was paid for, and made a feast when it was all done to celebrate their ownership. A landed proprietor, to be sure, does not mind an occasional expenditure to entertain his friends.

All this Pierre and Jeanne had accomplished just before the war of 1870, with Germany, broke out. The conscription fell upon Bierre, who, moreover, was an old soldier, and belonged to the reserves. A gunner he had been, famous for skill in hitting a mark with a shell.

Sevres had fallen into the hands of the Germans but the French guns were pounding away at them from the fort on Mount Valerian. Pierre Barlat was a gunner at that fort, and, one wintry day, was standing by his gun, when Gen. Noel, the Commander, came up and leveled his field glass at the Sevres bridge.

"Gunner," he said sharply, without looking at Pierre.

"General," answered Pierre, respectfully saluting.

"Do you see the Sevres bridge over there?"

"I see it very well, sir."

"And that little cottage there, at the left in a thicket of shrubs?"

Pierre turned pale.

"I see it, sir."

"It's a nest of Prussians. Fire at it with a shell, my man."

Pierre turned paler still and in spite of the cold wind that made the officers shiver in their great coats one might have seen big drops of sweat standing out on his forehead; but nobody noticed the gunner's emotion.

He sighted his piece carefully, deliberately; then fired.

The officers, with their glasses, marked the effect of the shot after the smoke had cleared. "Well hit, my man! well hit!" exclaimed the General, looking at Pierre with a smile. "The cottage couldn't have been very solid. It is completely smashed."

He was surprised to see great tears running down the gunner's cheeks.

"What's the matter, man?" the General asked rather sharply.

"Pardon me, General," said Pierre, recovering himself. "It was my house—everything I had in the world."

The Chicago post-office makes a profit of $2,000,000 yearly.

THE JOKER'[S]

JESTS AND YARNS ... OF THE

Rare Airs—An In... Told Him Why ... Though Married—

"Oh! what is so rare ... Well, the trembling ... tune ... That our grandfath... As they lallygagged ... moon, And nothing could ... The side of the girls ... spoon.

"A day is someth... one respect,' said Mc... ly. "What respect is ... Crackle. "Each has to go th... process before it is of...

Mr. Nicefello ... you so cold and dist... Sweet girl (quietly) ... out, and the sofa is ... move up to your ... Weekly.

"Yes," replied th... what I have been th... seat in your bill."

Parrot—Hooray f... He's the duck for n... Tribune.

Druggist—There ... twenty-five. Customer—Excus... trade. Druggist—Oh, I ... cents.