THE WORLD'S COLUMBIAN EXPOSITION—THE INDIAN SCOUT.

All through the grounds, and especially in the Court of Honor and around the lagoons rise beautiful pieces of sculpture, modeled in staff. "Old Ephraim," "A Grizzly Grave Digger," "At Bay," "The Still Hunt," and others are well known, and the two imposing groups of "The Indian Scout" and "The Cow Boy," in front of the Transportation building, scarcely less so.

"The Indian Scout," which we illustrate, was executed by Mr. A. Phimster Proctor, who was also the sculptor of the bold and impressive "Cow Boy" group at the other side of the steps near the great golden doorway of the Transportation building. The Indian, grim-visaged, with his hand shading his eyes, scans the prairie. The tense listening expressed in every line and muscle of his figure is much commended. The Indian is no specimen of the reservation creature, which modern civilization is annihilating, but the bold, free chief endowed with all the traits of a race now rapidly becoming extinct. As for the horse, one can almost see the flesh quiver, so naturally is it modeled. Beyond the group will be noticed the rear end of the Mines building and the huge dome of the Administration building.

The Volcano of Kilauea, Sandwich Islands.

Dr. S. E. Bishop, writing to the *Independent*, says: A macadamized road of the best quality is now nearly completed from the seaport of Hila, thirty-one miles, to the volcano, which will make a delightful drive of five hours up and three back, through exquisite tropical forests. This road has opened up the center of a hitherto inaccessible tract of superb coffee lands, one hundred thousand acres in extent, which are being taken up faster than surveyors can cut their way to them. The region is cool, moist, and free from miasm, well fitted for white settlers. Hila itself is a gem of beauty. It will soon have opened up in several directions the finest back country of any part of the group.

The volcano itself is in prime order for tourist inspection. The red crust of the lake is seamed with long zigzag crevices of bright fire creeping across its breadth. Here and there in the center, or around the rim, fountains of the massive white metal leap up and fall back with heavy crash, or play aloft with surging crests of dazzling fire. Now and then a great power wells up from below, and the whole lake becomes a white, molten, and surging surface, and pours a flooding sheet of fire over some part of the black floor around it, driving away in haste any visitors who have gone into the pit to fish up melted lava with their sticks. Two weeks ago the lava flood made a huge rush and carried away all the parapet walls which it had built up, and filled the whole bottom of Halemaumau pit with a surging lake, one hundred acres in breadth. The level of the lava is working well up toward the top of the pit, and must within a few months overflow upon the main floor of Kilauea, as is its habit.

The Sprouting Insect.

The *Home Journal* says: "One of the most curious natural productions of the West Indies is the famed vegetable fly, an insect about the size and color of a drone bee, but without wings. In the month of May it buries itself in the earth and begins to vegetate. By the beginning of June a sprout has issued from the creature's back, and made its appearance above the surface of the ground. By the end of July the tiny tree (known on the island as the fly tree) has attained its full size, being then about three inches high, but a perfect tree in every particular, much resembling a delicate coral branch. Pods appear on its branches as soon as it arrives at its full growth; these ripen and drop off in August. Instead of containing seeds, as one would naturally suppose, these pods have from three to six small, hard worms upon the interior."

Professor Riley says: "The above item has been going the rounds of the newspapers for at least four or five years. I received it two and a half years ago from a correspondent and commented upon it in *Insect Life*, volume iii., page 399. It is a romance with a grain of truth. The probabilities are that the story had its origin in the growth of a fungus of the genus Cordyceps from the back of a subterranean insect. This fungus as it appears above ground is probably attacked by a fungus gnat of the family Mycetophilidae or by some fungus-eating beetle, and it is the larvæ of the latter which are described as the small hard worms. On page 218 of volume iv., *Insect Life*, I have figured and described a species of Cordyceps which grows from an underground larva in China and which is used in that country as a medicine, having the same effect as ginseng."

Safety Devices for Street Cars.

The frequent accidents due to the increased speeds of the street cars, when the cable or electricity is used in place of horses, have created a demand for an effective device to save the lives of persons who fall in front of such cars.

The form of fender now in use on a line between Lynn and Boston is a frame of S-shaped steel wire, the lower bar of which is covered with rubber. It may be run close to the track or lifted high above it, the height being controlled by a releasing device operated by the knee of the motorman. Repeated experiments on dummies placed on the track have demonstrated that this fender will pick up man, woman or child and carry them along without harm in a large proportion of cases.

Another device consists of a framework of light steel, which projects four feet in front of the car. A strip of flat rubber four inches wide extends along the tip, forming a cushion and scoop. The body of the fender is of wire netting and canvas.

The inventor claims that if a person be struck by the fender the rubber tip will pick him up, and he will fall into the canvas net without injury.

There is still plenty of room for first-class inventions in this line.

Extracting Gold from its Ores.

In this process molten lead is used for extracting gold from its ores instead of mercury. The lead is melted on a shallow hearth and the powdered ore is fed in at one end and carried forward as a film over the surface of the lead by means of an agitator moving over that surface. It is thus brought to the other end, where it escapes through a hopper. In order to prevent oxidation of the lead, the chamber is kept filled with carbonic oxide from a gas producer.

THE WORLD'S COLUMBIAN EXPOSITION—THE INDIAN SCOUT.

Gas Motors for Street Cars.

The *American Manufacturer* says that in several reports made by various authorities recently is given considerable information relative to the progress which has been made in Continental Europe in bringing gas motors into use for driving street cars; one a report by Herr Stucker, read before the last meeting of the Swiss Gas and Water Association, on the gas-driven tram line between Neuchatel and St. Blaise. In that report Herr Stucker says that Neuchatel has extended considerably along the shores of the lake and tramways have become a necessity. In planning the new line from Neuchatel to St. Blaise, the question of the choice of power came up for serious consideration. Horse power, electricity, and compressed air all had their advocates; but all were too dear, and the decision arrived at was one in favor of the use of coal gas.

Compressed air has the advantages of having no noise, no smoke, easy starting and stopping. It gives great satisfaction in Berne, on account of its quietness; but it costs there about 15 cents per car mile, although inexpensive hydraulic machines are used for compression. The line is also too expensive for any suburban district. Steam is somewhat less in its first cost than compressed air, but a locomotive has to be moved about as well as a car, and two persons are required for each machine, while the engines make much noise and smoke. From Wiesbaden to Biebrich there run locomotives which are said to be free from these faults, but they cost $5,950 each. Steam roads pay when there are many passengers; not unless. Horse roads are cheap in first cost, but the current cost is high. None of these is particularly well adapted for a line on which the traffic is expected to be very small, say seven passengers per run.

In the present case, the best means is the use of gas motors, using cylinders of gas compressed to 10 atmospheres, and containing enough gas to do the run out and home. The firm of Gillieron & Amrein, Vevay, undertook to supply the gas motors. They are strong, simple, practical, and safe, and free from noise and smoke; they only require a weekly cleaning. The starting and stopping are instant and free from shock. The weight of the car, with 20 passengers, 1 driver, and 1 conductor, is about 6 tons. The distance is 3⅛ miles, and the highest ground is half way, 40 feet higher than Neuchatel; 7·9 horse power are necessary to get up a speed of 11¼ miles an hour. If another car were hitched on, also fully loaded, the journey would take 27·4 minutes. The cost of gas, with one car, would be at $1.12 per 1,000 cubic feet, ½ cent per passenger and per journey, and with two cars it would be 22 cents.

A report to the municipality of Nordhausen upon the gas-driven street cars in use in Dresden states that the gas is let in at six atmospheres pressure to permanent holders under the car. The gas is always admitted to the motor at the same pressure. The cooling water is in a tank at the top of the car, and it circulates naturally down to the cylinder when cool and up to the roof when warmed. Herr Luhrig, the inventor of the car, finds this simple device very satisfactory as means of cooling the cylinder. Starting and stopping, even on heavy inclines, are quite easy and trustworthy. The report is decidedly in favor of the adoption of the new system by the town of Nordhausen, and points out that the durability of this system, as compared with that of an electric railway, is far greater. There are no wires to lay out upon a compression station. On the other hand, a gas car costs more than an electric one; say $5,000 each, while the Swiss ones, previously referred to, cost $3,000 each. An electric line pays when there is a big traffic. Gas can run a small traffic. A gas car can go anywhere, and there may be few or many in use. Electric cars are a good deal dependent upon one another, and upon the arrangement of the track for them.

Another report to the Nordhausen authorities gives the following as the advantages of gas cars over electric cars: Much less first cost, since the gas company will undertake the supply of gas in a compressed state, and there is nothing farther necessary except a car shed; less current cost, since there are no central stations or conductors to keep up, and the outlay, apart from gas, which costs only three cents per mile, is limited to lubrication and cleaning material, repairs, upkeep of rails, wages and renewals, independent action of the cars, so that there cannot be a general breakdown; ease of making a small beginning, and extending as occasion offers; no consumption of gas when not running, while an electric station must keep going; ease of putting an abnormal number of cars to run on the same line when there is an extra demand; ease of replacing the gas motors by electric motors, if at any time thought advisable, while the inverse change cannot be made in an electric car.

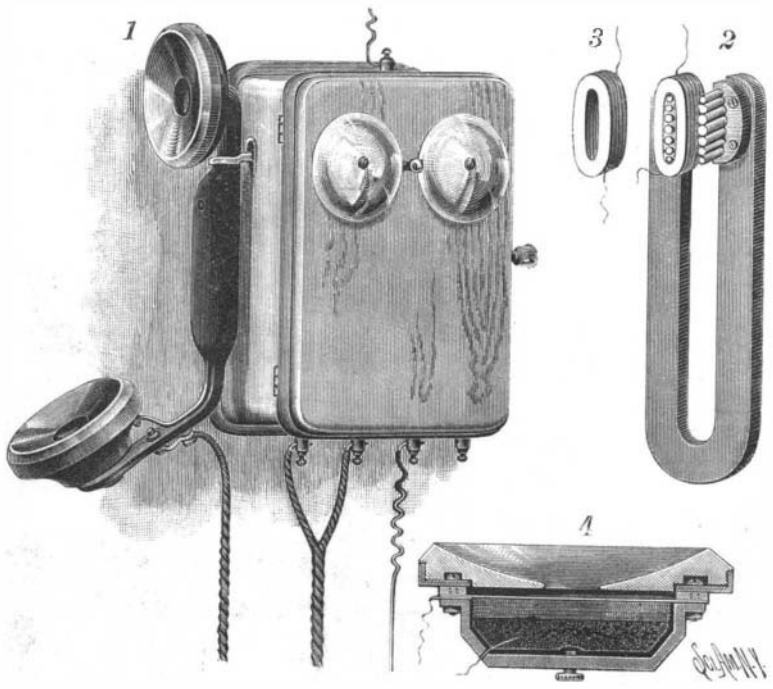
The Dessau German Continental Gas Company in a recent report stated that the application of gas for driving street cars recently introduced in Dresden may stand in importance next to the introduction of the Welsbach lamp, and that the absence of overhead or underground wires and big central stations makes it possible to work such a system with small capital, while the known cheapness of working of gas motors is by this means taken advantage of.

NORIEGA'S TELEPHONE.

For some years past Mr. Eloy Noriega, a Spanish gentleman, residing in the city of Mexico, Mexico, has been devoting a great deal of attention to electrical inventions, especially to the microphone and telephone. An interesting collection of these instruments was shown at the World's Columbian Exposition, Chicago, where they attracted much attention. From these we have selected for illustration one of the simpler forms, which is a practical and useful telephone.

Fig. 1 of the engraving shows the instrument completed, arranged for practical use; Fig. 2 is a perspective view of the receiver magnet detached from the telephone; Fig. 3 is a perspective view of one of the receiver coils; and Fig. 4 is a section of the transmitter.

In the box containing the magneto call is placed the induction coil, the telephone switch, and the transmitter and receiver are connected up in the usual way. A flexible cord carries wires for both receiver and transmitter. As will be noticed by reference to the engraving, the receiver and transmitter are both secured to an adjustable handle, so that while the receiver is at the ear, the transmitter will be in convenient position for receiving speech. The peculiarity of the transmitter is the device by which the necessary variable contact is secured. Behind the diaphragm is placed a layer of carbon filaments, similar to those used in incandescent lamps. This layer of filaments is backed up by an adjustable carbon plate. The diaphragm forms a part of the circuit, and when sounds are uttered in the vicinity of the diaphragm, the vibrations of the diaphragm alternately compress and release the carbon filaments, thus changing the conductivity of the transmitter and producing the variations in the primary circuit necessary to the transmission of speech.



NORIEGA'S NEW TELEPHONE.

The receiver is provided with a U magnet, with pole pieces extending from its sides, the pole pieces being formed of series of studs of different diameter. Upon each pole piece is placed a coil, the two coils being connected up in the line circuit in the usual way.

In this instrument all the conditions for convenience in use and for high efficiency are to be found. Mr. Noriega has thus in one invention materially improved the telephone and reduced it to its simplest form.

Cholera Caused by Nitrous Acid.

The *Universal Medical Journal* calls attention to the fact that animals poisoned by nitrous acid present all the symptoms of choleraic patients. It is well known that Professor Emmerich, of Munich, and Professor Ziro Tsuboi, of Tokio, conclude from numerous experiments that Asiatic cholera is a toxæmia by nitrous acid generated by the comma bacillus of Koch. Notwithstanding the fact that more than ten years have elapsed since the comma bacillus was discovered, no great progress has been made as regards the actual cause of cholera. At the beginning of the last decade, ptomaines were shown to exist in the cultures of bacteria, and it was assumed that in all infectious diseases the symptoms of the malady, as well as death therefrom, were caused by these organisms. A few years later there were also found in older cultures of tuberculosis and diphtheria bacilli certain poisonous albumens, and immediately upon the disclosure of this fact many investigators, adhering to the opinion that disease and death from all contagious maladies are caused by the presence of these albuminous poisons (similar, perhaps, to those of poisonous snakes), spent much time in endeavoring to discover them in cultures of all kinds. The two physicians above named, instead of being influenced by these prevailing opinions, expressed the belief that the nitrous acid generated by the cholera bacilli is to be regarded as the true cause of all the symptoms and of death by cholera. O. Low had already shown that nitrous acid is a powerful toxic. The authors first proved by experiments on guinea pigs, rabbits, and dogs that poisoning by nitrous acid caused precisely the same symptoms in guinea pigs as those induced by inoculation of cholera. They further showed that the type of disease induced by nitrous acid poisoning in man corresponds exactly with all the symptoms of Asiatic cholera. Poisoning by nitrous acid can be proved by examination of the blood by spectral analysis, and it is an interesting fact that the blood of guinea pigs having died of induced cholera presents exactly the same appearance in the spectrum as that of animals poisoned by nitrous acid.

Simulation in the Insane.

Dr. Larrousinie, *These de Paris*, 1893 (abstr. in *Jour. de Med. de Paris*, No. 26), shows very justly how it is for the interest of society as well as for that of the patients that the alienist physician should recognize that simulation is very common among the insane, and that it may lead to serious results if not detected. He shows that this fact, though known back to Pinel, has only of late years attracted much attention, and he regrets that friends, magistrates frequently, journalists invariably, and sometimes even physicians who are not specialists, should be the dupes of the insane, by which fact much of the outcries against asylums and the disastrous disagreements and divisions that are often seen, are caused.

Dr. Larrousinie studies successively the simulation in the non-dangerous and the dangerous lunatics, and gives a special chapter to the pyromaniacs, in whom it is the rule. It may be met with in all forms of derangements, but the impulsive forms, excepting pyromania, are most free from it. It is especially common in systematized delusional insanity, a fact of importance, as this is one of the most dangerous forms. It may present itself as partial or total and in an infinite number of degrees. In general, self-interest is the motive. One tries to deceive to facilitate his escape, another has the notion of revenge. Sometimes shame is the cause, as frequently happens in females with sexual hallucinations. It is of importance, therefore, for the physician to see through the deception; he should be easily suspicious of it, and should study his patients with the greatest care in view of the possibility of simulation. The author ends his thesis with the recommendation that a medical expert should sit with the judge in cases where the question of the retaining or discharge of a patient in an asylum is involved. In case of a disagreement a second expert should be called in to decide the case.—*Amer. Jour. of Insanity.*

Remedial Use of Apples.

Chemically the apple is composed of vegetable fiber, albumen, sugar, gum chlorophyl, malic acid, gallic acid, lime, and much water. Furthermore, the German analysts say that the apple contains a larger percentage of phosphorus than any other fruit or vegetable. The phosphorus is admirably adapted for renewing the essential nervous matter—lecithin—of the brain and spinal cord. It is, perhaps, for the same reason, rudely understood, that old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves to be growing feeble and infirm, resorted to this fruit, renewing their powers of mind and body. Also, the acids of the apple are of singular use for men of sedentary hibits, whose livers are sluggish in action, those acids serving to eliminate from the body noxious matters, which, if retained, would make the brain heavy and dull, or bring about jaundice or skin eruptions and other allied troubles. Some such experience must have led to the custom of taking apple sauce with roast pork, rich goose, and like dishes. The malic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also the fact that such ripe fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach, rather than provoke it. Their vegetable sauces and juices are converted into alkaline carbonates, which tend to counteract acidity.—*North American Practitioner.*