

# FRESH MARVELS OF SCIENCE

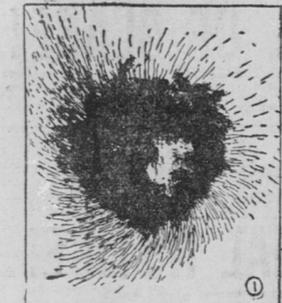
## Possibility That a Person's Thoughts May Yet Be Photographed

Within the few months last past students of psychic science have been stimulated by the startling announcement that the thoughts of an individual may be rendered visible through the mediumship of photography.

Theosophy has always taught that thoughts are real, tangible things, visible at all times to the one whose psychic development was sufficiently advanced. Now comes the statement that it is not at all necessary that one should possess "mediumistic" ability in order to visually perceive the thoughts of another; and that it is but an exceedingly simple matter to secure a lasting image of the thought.

The announcement comes simultaneously from France and Iowa that thought impressions have been successfully photographed. Dr. Baraduc of Paris has recently presented to the Academy of Medicine a statement that he had obtained photographs of thought impressions; and, furthermore, that he had "photographed a soul." Just what the pictures looked like, or the mode of their production, is not stated in the brief newspaper mention of the event.

Dr. Clarke of Iowa announces a somewhat similar achievement, which, while not claiming to produce an image of an actual thought, does present pictures which are the direct result of brain force exerted upon a photographic plate. The



Braingraph of an Inventor.

result of Dr. Clarke's experiments, although not so astounding as those alleged by Dr. Baraduc, are nevertheless more interesting, as the means employed are very simple and are within the reach of many among the readers of THE CALL. They are also fully described.

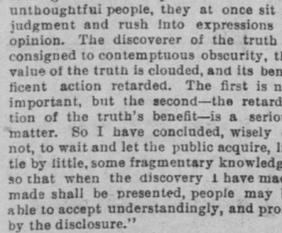
As a matter of fact the subject of thought photography has received a great deal of attention among those scientific men whose tastes led to the investigation of the psychic side of life. The marvelous revelations of the X-ray, startling in character as they are, pale to insignificance beside the more marvelous disclosures that pure science has in store for the coming century. Already a few advanced students possess the knowledge of discoveries of the most profound and vital importance. Yet, the publicity of the information is withheld because of the opinions entertained by the discoverers that the



Braingraph of a Lunatic.

was found that the human brain was clearly cognizant of the feelings of anger, joy or fear excited in a dog whose cranium was encircled by one of the metal bands.

What was the character of the "something" transmitted over the wires? Who is the savant who shall demonstrate that it is not a form of so-called electrical energy? Thought photography is the physical expression of a psychic law. Through the kindness of Dr. Clarke, I am permitted to lay before the readers of THE CALL a description of the apparatus employed by him, and also four photographs, "braingraphs," taken by him, showing the peculiar lines and figurations of the brain force of four different individuals. While these pictures are in no sense thought photographs, they do much to establish the claim that the terms



Braingraph of a Poetess.

"mind" and "matter" are but distinctions without a difference. The apparatus of Dr. Clarke consists of an induction coil capable of producing an exceedingly high-tension current. The wires carrying the induction, or secondary current, are connected by one terminal to a metal plate held in position at the base of the brain, and the other terminal, by means of branching wires, to three metal plates placed one over the center of the frontal bone and the other two placed on opposite sides of the forehead, as shown in the cut. A sensitive photographic plate is placed between two sheets of silver foil and inclosed in a plate holder, the wire of the secondary circuit being led in through the sides of the plate holder so that its ends touch the silver foil on each side of the sensitized plate. The apparatus is adjusted upon the head of the subject, and all electrical connections made before the primary current is turned on. An exposure of a few seconds is sufficient. It is found that all subjects are not good subjects. Another peculiarity of the process points to the fact that terrestrial magnetism is in some way connected with the phenomenon. The sensitive plate must be placed at right angles to the line of terrestrial magnetic declination at the place of operation. The experiment succeeds best during dry weather; the presence of moisture in the atmosphere exerts a deterrent influence.

Naturally enough whenever an announcement like that now made is laid before the public there will be found two classes of opinion. One will pooh-pooh the matter and dismiss it from consideration without investigation, mainly because of their inability to comprehend that there

may exist anything not mentioned in textbooks. The other will withhold judgment until the opportunity has been afforded and availed of to make full and complete examination of the whole matter. It is the latter who by their labor make useful each newly found power of nature. There is no little diversity of opinion as to the merits of phrenology. By some it is held to be an exact science, by others to be a vagary. By most men of science it is believed that phrenology possesses, in a general sense, some truths, which, while falling far short of all the claims put forth by the votaries of the cult, do have some value in assisting the determination of the general character of the subject-individual.

The results of Dr. Clarke's investigations seem to establish a fact; that it is possible to learn by the means herein described something of helpful value in determining the character of a brain. This is a great step forward on the road to intellectual progress. How many children have been educated to trades and professions for which they have proved unfitted? We are all familiar with examples of misplaced education. The boy is sent to college and large sums of money spent in the attempt to make of him a lawyer or a preacher, and the expense has proved wasted, the labor a failure. It will now be possible, with the development of the discovery made by Dr. Clarke, to ascertain the natural brain force of the child and its tendencies, and so be able to develop a peculiar talent along natural lines; to assist nature instead of thwarting her. The braingraph must be of value in criminal jurisprudence, as by its use the idiot may be infallibly distinguished from the responsible criminal.

In his letter to me Dr. Clarke states his hopefulness in being able to produce the braingraph without the presence of the conducting wires. He expects to obtain a braingraph of an individual without that individual being cognizant of the operation. If he is successful in this we may look forward to a revolution in our opinions of individuals. The candidate for public office will find that his cerebral activities and mental predilections have been infallibly pictured and any obliquity disclosed. The employer will take the braingraph of the applicant for a confidential clerkship, and the coming woman will undoubtedly secure at the earliest moment a braingraph of the coming man.

This last addition to the possessions of science is but one of many discoveries that have been made within the past few years and which mark the close of the century as the richest period in history. Never, within so brief a time, has there come to the knowledge of the world so many disclosures of the possibilities of nature. We are rapidly reaching the apex of intelligence, and it is possible that within the lives of those now living man will be able to determine in advance the physical and mental status of his progeny; will be able to hold converse with his fellows at a distance without the aid of wires or apparatus; will be able to see his distant conversationalist, and not be limited to the little globe we live upon, but be able to reach out to other members of the family of the Sun.

F. M. Close, D. Sc.

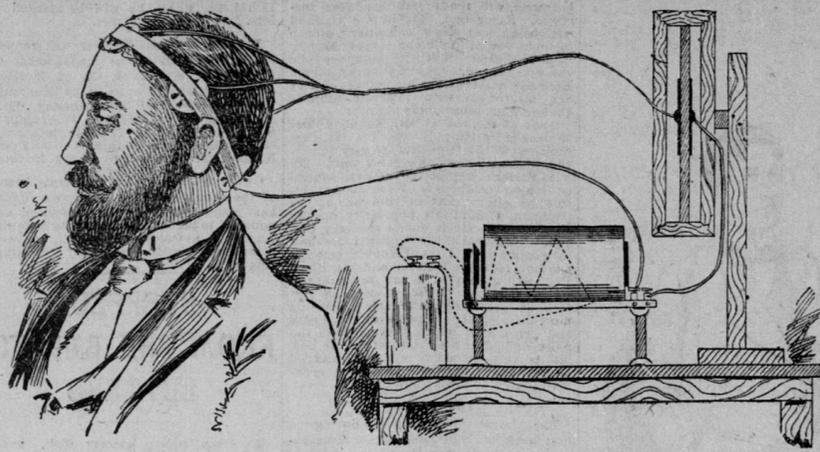
Natural Gas Failure.

The review of natural gas production in the United States in 1895, made in the report of the United States Geological Survey, just issued, shows its value last year to have been \$18,006,650, as against \$13,964,400 in 1894. The value of the natural product consumed in 1895 was \$7,920,187; the total of pipe laid was 43,850,241 feet, and the number of producing wells opened 3328. The most noticeable feature of the year was the decreasing pressure in all of the natural gas wells of the country. The estimated life of the wells has also been greatly reduced. The value of the consumption of natural gas in the United States during the ten years from 1886 to 1895 was greatest in 1888, when it was \$242,129,875. From that time until 1891 the decrease was rapid, and in the past four years there has been a gradual decline.

Experimenting With Car Wheels.

It is known that chilled cast iron wheels, commonly used for freight cars, are liable to be cracked from the heating of the tread when a long-continued application of the brake occurs, and several accidents having occurred on heavy grades owing to wheel failures, an experiment was suggested. The wheels to be tested were placed horizontally in a mold of sand with an open space of a half inch or so around the rim. Then molten metal was poured into this space, heating the rim quickly and cracked in forty seconds, a second one in two minutes, while the third wheel showed no signs of failure. The latter wheel was made at the Altoona shops, and that it stood this test would seem to guarantee it absolutely from ever giving out on account of heating by brake friction.

As to the conditions secured in this experiment they must be considered to have



APPARATUS FOR MENTAL PHOTOGRAPHY.

been not a reproduction of the conditions to be investigated but an exaggeration of one of them. The heating by contact of molten metal was more sudden than the heating by brake friction could be, and in that respect the exaggeration may have been preferable rather than otherwise; while the other conditions which have to do with the breaking of carwheels in use, the severe and changing pressures and the sudden shocks, were entirely absent. Experiments such as these, of course, have their value and are to be encouraged, but they should not be taken to prove too much.

**Electrolytic Welsbach Mantles.**

A new and cheap process for the manufacture of the incandescent mantles employed in the Welsbach burner has been patented in Germany. It consists in mixing with the nitrates or sulphates of the earthy metals used the salts of their bases, thus forming an electrolyte, through which a current is passed into a skeleton of fine-woven platinum wire, shaped like a mantle. On this framework the metals are electrolytically deposited and subsequently calcined, after which the platinum skeletons are removed. Mantles made in this manner are claimed to be stronger than mantles made in the ordinary way, and further, the cost of manufacture according to present methods is considerably reduced.

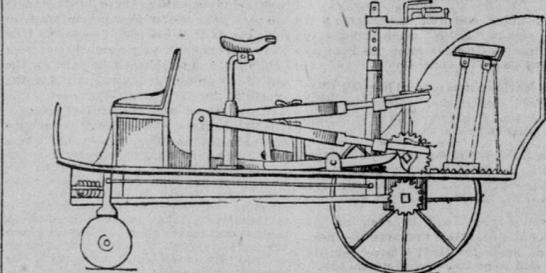
**Electric Cloth Pressing.**

In pressing woolen fabrics in order to give them a smooth, fine appearance, both a uniform pressure and a uniform heat are required. By a recently developed system the heating is done electrically, the fabric being placed between the metallic plates through which sufficient current is passed while under hydraulic pressure to heat them to slightly more than the temperature of boiling water. One dynamo of fifty volts and 700 amperes will suffice for five presses having 120 piles to be heated; the cost of heating for one press for a period of half an hour and for seventy plates is about 21 cents.

**Foot-Propelled Wagon.**

George G. J. Miller of Columbus, Ohio, has invented a wagon intended to carry several people and large loads, but capable of being propelled by the foot power of one person.

This end is accomplished by making



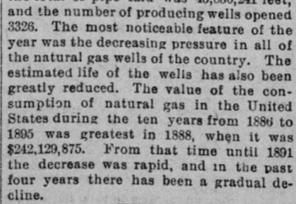
FOOT-PROPELLED WAGON.

use of several well-known lever principles. The operator sits in the rear of the wagon, and by pressing his foot on a certain lever causes another lever to rise and engage with a sort of cam. This produces great power, so that the cam shaft is made to revolve. The power is then communicated to the axle of the vehicle by cogwheels. The idea is that the great power generated by the cam attachment will cause the vehicle to run several feet by the impetus thus imparted. It will be seen that the driving motion is not a positive one, and of course the vehicle would be a slow hill-climber, but on a good road it should develop considerable speed.

**Cotton-Picking Machine.**

A few years ago a committee of scientific men, after a conference, decided that one of the great industrial needs of the time was a cotton-picking machine. They further declared that there was a fortune in store for the person who would invent one. There have been numerous attempts made in that direction, but all have been failures for some reason.

Woodbury K. Dana of Westbrook, Me.,



APPARATUS FOR HARVESTING COTTON.

has just patented a machine that is constructed on the most simple but novel principles, and, as far as can be judged, from the theoretical construction of it, ought to work. The principle made use of is suction and the method of applying it is the same as the pneumatic cash-carryers in use in stores all over the country.

There are two parts to the machine, mounted upon separate trucks. One truck contains an engine and boiler and a centrifugal air pump driven by same. The other truck carries the picking machine, which is connected to the air pump by a flexible tube. The picking machine is nothing more than a tank closed on all sides and with a screen extending through a section of it a few inches from the top. From different sides of the tank hose pipes are attached

that have end pieces intended to fit over the ball of growing cotton.

By setting the centrifugal pump in operation the air is exhausted from the tank and of course the air from the outside rushes in through the hose pipes. It then follows that if the end of the hose be placed over the ball of growing cotton the fiber will be torn loose and follow the air into the tank.

The screen across the tank prevents the cotton from passing into the pump.

**Fighting From M. dair.**

A balloon which it is said, can be propelled around a circle if necessary without respect to the wind, has been devised by A. R. Reed of Hot Springs, Ark. His device has been submitted to some Cuban sympathizers in this country, and it may be adopted in the war now raging on the little island.

The gas bag is cigar-shaped. The usual car or basket hangs underneath, and attached rigidly to the bottom of the car is an air tube or magazine somewhat larger than the basket, say thirty or thirty-six inches in diameter. At one end it is attached a rudder, to work partly inside and partly outside of the tube. At the middle of the tube there is a strong fanwheel, similar to the electric fans. This is driven by a small gasoline engine of about two horsepower, made of aluminum. This engine goes in the basket immediately over the circular fan, and the latter is run by an ordinary belt running through the bottom of the basket from the engine.

The rudder is managed by ropes. The gas bag is covered with the usual rope netting to support the car and entire machinery. The carrying machinery will depend entirely upon the size of the gas bag.

Inside of thirty days can be made a balloon which will carry 3000 pounds of dynamite in bombs and the necessary apparatus to fire them with precision, and with this steering gear, the inventor says, he can direct a balloon in any direction and make it run around in a circle.

**Production of Copper.**

According to the Engineering and Mining Journal the production and export of copper for the first six months of this year makes a very satisfactory showing. The total increase in the United States in production was 11,698 long tons, or 14.6 per cent, and the increase of export, far in excess of the increase of production, amounted to 74.1 per cent. On the 30th of June the stocks in sight in England and France were estimated at 30,720 tons and the quantity from Chile 5550, making a total of 36,270, as against 36,901 tons on May 31. These figures show a decrease of more than 600 tons during the month. The decrease as compared with July 1, 1895, is 22,238 tons.

**Telephoning in the Rockies.**

Telephone construction in the Rocky Mountains is attended with a great deal of hardship. The line built from Leadville to Aspen several years ago is a case in point. It took two months to cover the entire length, forty-eight miles. In ordinary construction, the poles would be set forty-two to the mile, but at certain points, where sharp turns were necessary, the number sometimes increased to seventy-five to the mile. The members of the construction gang had to be as expert as axmen as they were as linemen, for when timber was encountered a path of 200 feet on each side of the line had to be cleared in order that wires might not be broken when trees were blown over by the terrific blasts which at times prevail in that region.

A great deal of the comparative slowness of the installation was owing to the inability of the workmen to labor in such a rarefied atmosphere. At one point the wires were strung at an elevation of 12,000 feet above the level of the sea. In such an altitude the linemen soon became completely tired; after he has climbed two or three poles he has to take a rest to recuperate his energies. The preparation of the holes for poles, which would have been tedious in similar ground even in an ordinary atmosphere, was an especially slow and fatiguing operation. It was often necessary to blast a hole for the pole by the use of giant powder, and an ex-miner, who had had an extensive experience with explosives, was assigned to the job.

The digging of one pole hole would sometimes occupy him a whole day, working honestly. Over 300 pounds of powder were used on the line for this purpose. When the conti-

# NEW ELECTRIC ELEVATOR

## A San Franciscan Invents One That Neither Jerks Nor Jars

Ever since elevators have been in general use inventors have been at work trying to overcome that "jerky"ness" so manifest when the machinery starts or stops which is so unpleasant to the passengers. The most elaborate machinery has been constructed to this end, but there was little improvement until E. M. Fraser of this City thought of a new principle. That was some time ago and he now has a complete machine in operation in the new brick building near the corner of Main and Mission streets. A CALL representative rode in it a few days ago and found all of the objectionable features in the old elevators entirely overcome. It swung between the floors with the ease of a bird in flight in midair. Up to the top and then back without apparently stopping at all. It could be stopped or started anywhere without the slightest jar. With such ease does the Fraser machine work that it seems surprising and it is really a pleasure to ride in it.

How has this been accomplished? will be asked. And it can be answered, by an

entire departure from old principles. In the old machines, hydraulic, electric and steam, the start of the elevator-car was made from a "dead" machine. As a consequence, there was considerable lost motion to be taken up before the momentum was communicated to the car.

Mr. Fraser has overcome this by using electric motors and keeping them running all the time during the hours the elevator is to be used. The accompanying diagram will explain the principle of the machine, although no attempt has been made to follow the details or proportions of the working apparatus. Briefly, the principle is that of the differential pulley-block, but accomplished by changing the speeds of the pulleys instead of having them of different sizes.

A represents the electric motors running in opposite directions; B1 B2 the pulleys connected to the motors by an endless rope; C the winze around which the rope passes several times, that connects the two lock pulleys; E the elevator-car, suspended by a rope that passes over a pulley and is connected to the same shaft (D) as the winze.

If both of the motors are running at the same speed it follows that the rope will travel over the pulleys (B1, B2) without changing their positions. But should the speed of the lower motor be increased and the upper motor decreased there will be a pull on the descending rope from pulley B1 that will cause it to descend. This will cause the winze to revolve and raise the pulley B2. Power is thus communicated to the shaft (D), and the elevator descends. Reversing the movement causes the elevator to ascend.

The changing of the speeds of the motors is accomplished by the use of an ordinary resistance coil. The electric current is simply turned out of one field into another. As the motors are running all the time, it follows that there can be no jerk, no matter how suddenly the change from one field to the other is made. All practical mechanics who have seen the Fraser elevator pronounce it the simplest and most practical machine built, aside from the fact that the cars are the most comfortable to ride in. The cars can be made to run at the rate of 500 feet a minute if desired.

**Turning Silver Into Gold.**

Dr. Stephen H. Emmens, the inventor of the fearful explosive, "Emmensite," and a scientist of recognized ability, has made public a discovery that, if true, is the most wonderful of the century.

He declares on his reputation as a prize man of Kings College, London, and a pupil of the celebrated chemist, Bloxam, that he has discovered a method of changing silver into gold. He further asserts that a laboratory is about to be erected in the vicinity of New York in which the process will be carried on in a commercial way.

Dr. Emmens will not as yet make known any details of the discovery. All he will say is that the relations of the two metals to each other, chemically, and their constant association in nature, has long made it probable that they were but different forms of the same substance, just as charcoal and the diamond are allotropic forms of carbon.

Working on this line, he says that it has been found that neither of the metals is an elemental body. On page 431 of the last edition of Bloxam's chemistry there is a statement of recent discovery made by the scientist Cary Lea of Philadelphia, which Dr. Emmens says is the key to the problem of the relation of silver to gold.

Working along these lines he says it has been found possible to dissolve gold as easily as sugar in water, just as Lea says he dissolved silver. The color and action of the resultant solutions are the same, and on aggregating the particles of the silver solution a substance has been secured which has all the characteristic reactions of gold. The problem of making this transmutation of commercial value he asserts has also practically been worked out.

Dr. Emmens has records to show that thirty years ago he produced artificial diamonds from a carbon solution, and he has been at work ever since on the problem of the divisibility of the so-called elementary substances. He is not alone in these experiments, but does not care to give the names of his associates.

He says that the present announcement

is made somewhat before it otherwise would have been, because he thinks that it is his duty as a citizen to make known a discovery that will of necessity settle forever the warfare between silver and gold in the financial world.

He further says that he is aware of the sensation that the announcement will make, and that he is prepared to stand by it before the scientific world, which is alone able to pass judgment upon it.

**The Submarine Naval Boat.**

The New York people who are interested in the submarine boat being built for the navy in Baltimore are concerned whether the Navy Department will authorize the construction of another craft of like type. This, from present indications, does not seem probable, although the matter depends entirely on the results obtained by the boat now under way.

Most naval officers have little faith in this type of war craft. Perhaps this comes from their lack of precise knowledge of such boats, and it may spring also from the natural distrust of a boat the chief functions of which must be carried on under the water. The builders must, under their contract, demonstrate to the Government the reliability of the new boat; they must operate it in all the numerous ways called for under the specifications, and if they are able to do all that is required of them, and ever come to the surface again, there will probably be established a confidence in the boat which does not at present exist.

The foreign submarine boats operate without much accident, and there is no reason, theoretically, why the American craft, an admittedly superior boat of its type, should not be a success. Whether it will have the tactical value claimed for it by the inventor remains to be seen. It is reasonable, however, to suppose that a boat navigating under the water, out of sight of an enemy, would be capable of doing more damage than a much more powerful boat, the movements of which were known to an alert antagonist.

The latest naval appropriation act allows the Secretary of the Navy to have built two more submarine boats if the Baltimore craft proves satisfactory. It is yet too early to determine the practicability of the first boat of this type, but this does not prevent naval officers from assuming the disadvantages of the boat. They admit the possibility of its value, and they appreciate the varied offices which the inventor believes may be performed by his mechanism. They have, notwithstanding, a feeling that the boat will not be duplicated. If it shall succeed in meeting all the requirements, which are numerous and severe, the navy will have a valuable craft and the battle fleet an important ally.—New York Times.

According to the Ceylon Observer a very interesting experiment on the cultivation of Para rubber is being made on one of the estates in that country. About a year ago some 50,000 plants were purchased and planted on the estate, and the trees are now said to show a surprising growth, as do also those on the Government's experimental plantation in the same district. As is well known, the demand for good rubber is now in excess of the supply. During the years 1894-95 the value of the rubber exported from Para was upward of 37,000,000 miteils, being rather more than double the value of the exported rubber for the year 1890-91.

It appears from the report of the foreign trade of China for the year 1895, recently issued by the China Imperial Maritime Customs, that in connection with the silk industry of China the steps initiated by the Inspector-General to implant in China the Pasteur system of detecting and eradicating disease in silkworms has succeeded in the Kwangtung province.

The Caspian Sea is 650 feet below the level of the ocean.

**NEW TO-DAY.**

From U.S. Journal of Medicine.

Prof. W. H. Peeke, who makes a specialty of Epilepsy, has without doubt treated and cured more cases than any living Physician; his success is astonishing.

We have heard of cases of 20 years' standing cured by him. He publishes a valuable work on this disease, which he sends with a large bottle of his absolute cure, free to any sufferer who may send their P.O. and Express address. We advise anyone wishing a cure to address

Prof. W. H. PEEKE, F.D., 4 Cedar St., N.Y.

**VITALITY in MEN Restored**

Falling Sexual Strength in Old or Young Men can be quickly and permanently cured by medicine. Sufferers from Nervous Debility Weakness Varicocele and all wasting diseases should write to me for advice.

Have been a close student for many years of this subject of men's weakness in men, the fact is, I was a sufferer myself, and I have sought the aid of older men or specialists, but with no success. I investigated the subject deeply and discovered a simple but most remarkably successful remedy that completely cured me, and fully restored me from stricken, stunted condition to natural size and strength. I want every younger or older man to know that I have a sure cure for all such cases, and one need hesitate to write me as I will give you a full and complete list of cases, and all are held strictly confidential. Do not put it off, but write me at once, and I will always advise the day you do so. Address,

THOMAS SLATER, Box 2283, Shipper's Office, Baltimore City, Baltimore, Md.

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