In the Field of Electricity

Seeing by Electricity.

ALMOST simultaneously from two different places in the United States the invention of a device for seeing at a distance by electrical means is announced by two different inventors. The name adopted by each inventor for his device is "Televue." The names of the two inventors are given in Cassier's Magazine as J. B. Fowler and William H. Thompson.

A description of Mr. Fowler's device in one of the electrical papers shows a woman speaking into a telephone transmitter, while at the side of the transmitter is a projection akin to that of a hand stereoscope. The idea is that the apparition of the person at the distant end of the wire will be seen within this projection.

It is said that four wires are at present required to accomplish the speaking and seeing, but that eventually two wires only will be necessary. It is also said that natural colors are reproduced in the apparatus.

Complete details of the operation of this interesting apparatus are withheld, it is said, for reasons connected with patent office matters. In the meantime, however, it is reported that a company has been organized to push the scheme and stock in the company will be offered to the public.

Mr. Thompson does not appear to have progressed so far with his invention as Mr. Fowler, but it is stated on Mr. Thompson's behalf that his device will be an improvement on the other one.

In the absence of details it is obvious that no opinion can be expressed as to the value of the claims of these gentlemen. It is well established that the problem which they have set out to solve is not an easy one. Attempts have been made to solve it by men well equipped for the purpose, but thus far without success.

Not long ago M. A. Nisco of Belgium made a careful study of many of the methods that have been proposed for seeing at a distance electrically, and concluded that none of the devices thus far experimented with possesses the necessary requirements for successful operation.

In the majority of the methods for transmitting sight to a distance that property of selenium by which its electrical resistance varies with the intensity of the light thrown upon it has been employed, but this use of the substance has not hitherto met the expectations of inventors.

Wireless for Railroad Signalling.

The idea of applying wireless telegraphy to railway use is not new, if one include under this item the early attempts of Phelps, Smith, Brown and others with the so-called induction system. So far no actual use is being made of the new system of communication for controlling railway trains, but Dr. E. Nesber describes in a Berlin technical journal some interesting experiments made on this field near Berlin. A station was equipped with aparatus of the Telefunken system, and a horizontal aerial was adopted, about 210 feet long, 130 feet of which was stretched between two telegraph poles twelve inches below the telegraph wires, the remainder of the length being made up of the connections to the sending apparatus. A car attached to a steam-hauled train was fitted up with the receiving aerial, consisting of a horizontal rectangle of wires supported on six short posts. The receiving apparatus was placed in one compartment of the car. Experiments were made to determine the distance to which signals could be sent with certainty, and the influence of overhead wires. It was found that the latter, when directed over the car, interfered somewhat with the clearness of the received message. The experiment is thought to indicate that for railway signalling purposes a system of wireless telegraphy such as that used in this work can be depended upon to transmit messages about seven and one-half miles, and that with more attention to the equipment of both the fixed and moving stations greater distances can be covered. The operation of the system was found in no way to interfere with that of the ordinary telegraph lines running along the road.

Evolution of the Electric Light.

Fireflies are still in advance of mankind in the matter of economical light-producing. The phosphorescent glow which they give off is nearly pure light. Very little of the energy is wasted in heat, while in the case of the lighting devised by man more power is used up in producing heat, which is usually not wanted, than is converted into visible light.

The nearest we have yet come to following the fireflies is the mercury vapor light developed by American inventors, which, in the form of long, glowing tubes, has been seen in our shop windows as advertisements for two years or more.

They produce more light at less cost than any other practical method of illumination and would be extensively used if it were not for the color of the light. It contains no red rays, but is strongest in the violet end of the spectrum, extending far beyond the limits of visibility in that direction and including an abundance of rays that we can photograph, but cannot see.

This mercury glow light has made the "while you wait photography" of the pleasure parks a possibility, but it is too ghastly for common use. As the New York Independent says, it would turn a parlor into a morgue or a seance room.

But recently it is reported that German chemists have overcome this difficulty by putting into the electrodes other metals besides mercury, thus changing the character of the light and making it approach the light of common day.

Zinc with 10 per cent of bismuth and a trace of sodium is used for this purpose. If this proves practical we shall have our houses cheaply lighted by softly glowing tubes arranged in all sorts of artistic designs on the walls and ceilings instead of one or more points of light too bright to look at directly.

Production of Aluminum.

At the meeting in New York of the Electrochemical society Dr. Charles F. Chandler, Mitchell, professor of chemistry, gave a review of the work performed by C. M. Hall in connection with the discovery of an electrical process for the production of aluminum. A striking feature of this process, Prof. Chandler said, was the device thought out by Mr. Hall for the protection of the workmen from the scorching irradiance of the melted cryolite, which enters as one of the most important factors in the process. He has found that pulverized charcoal refused to mix with the seething mass of metal, although as a rule powders have the tendency to become inextricably fused with metals under such conditions. The charcoal, Prof. Chandler said, "sheds the cryolite as the duck sheds water, and no matter how well the mass is stirred the powder comes to the surface again, to form a distinct and easily abstracted top layer." Such a layer is now introduced by Mr. Hall for the double purpose of screening the workmen from the rays of the melted metal and to carry a stratum of powdered aluminum ready for mixture with the cryolite when needed. And by another very ingenious device a small incandescent light, suspended over the jar, is made to signalize the absorption of the aluminum already put in and the need for more.

Electricity in the Hothouse.

An astonishing invention by Mr. B. H. Thwaite, a British engineer, for the cultivation of plants by electricity has certain features which are both new and original. In the patent specification Mr. Thwaite says: "My invention consists in harnessing the intentional and consequential products of a combined suction of pressure-producer gas engine and electric energy generating plant for providing all the defined and beneficial influences on plant life in an economic and effective manner. I utilize the jacket water of the gas engine for heating the conservatory or glass house. I also utilize the carbon di-oxide of the gas engine exhaust gases for feeding the leaves, first purifying such gases before allowing them to enter into the immediate environment of the plants." Mr. Thwaite's resume of his discovery is certainly both interesting and suggestive. He says: "It is remarkable that the most economic method of converting the heat of coal fuel into work is also the most perfectly applicable to the electrical, thermal and chemical stimulation of organic vegetable life. My invention harnesses all the qualities of this system of power production to most satisfactorily effect the object in view, for on a large scale, in which I use ordinary bituminous steam coal instead of anthracite for power gas generating purposes, I recover the ammonia from the gas produced, in a concentrated solution, for fertilizing the soil in the rearing pots, etc., or I may convert it into a solid form as ammonia sulphate.

"My invention secures for the object defined the efficient recovery of:

"First—The nitrogenous matter of the coal.

"Second—The sensible heat of the gas engine jacket water.

"Third—The carbon di-oxide of the perfect products of combustion of the power gas.

"Fourth—Their sensible heat, all being available and efficiently utilized in addition to the electricity transformed power, to effect the object in view."

New Element Discovered.

It is reported that J. R. Rydberg, professor in physics at the university in Lund, Sweden, has a new theory about chemical elements. In working on the same he came to the conclusion that there must be an element having less atomic weight than any element heretofore known; in fact, only a small fraction of the atomic weight of hydrogen. It is further stated that such an element, the electron, was known before, but that Professor Rydberg has discovered that it does not consist of any separate kind of material. It is thought that the consequence of this will be very important, and will lead to the discovery that metals are not simply elements but are composed of electrons. It will follow, also, that electron—as the new element is called by Professor Rydberg—is a universal gas, which at all events forms an atmosphere which prevails throughout our solar system. It is also expected that the new discovery will lead to full scientific explanations of many things which up to date have remained doubtful or unexplained, as, for instance, the magnetic storms in connection with the sunspot periods, the northern lights, the terrestia. magnetism, etc.

Little Stories for Little People

Little Myra.

"I WANT to wear my white dress, mother." Myra was being dressed for afternoon.

"I think your pink one is better for today. The rosebud dress, you call it," said mother.

"No, I want to wear the white one," insisted Myra.

"I've a new ribbon for your hair that just matches the rosebud," mother added, as she brushed the curly locks.

But Myra stood with a cloudy face while she was made clean and sweet in the pretty dress, with the pink ribbon in her hair. Then, without a kiss or a "thank you" for her kind mother, she turned away and went upstairs, saying to herself: "She never let's me do as I want to. I wish I could find another place to live. I'm going to try. I'd better take some of my dolls with me, so that I'll not be lonesome." Picking up Lady Rose and old black Dinah, she crept softly downstairs and out of the door.

Up the street she went a little way and stopped before a house. "I think I'll try this one," she said. So she climbed the steps and rang the bell. The door opened, and she looked up into the face of a lady.

"Have you any children?" she asked.

"No, dear; what would you like?" said the lady.

"I would like to be your little girl, and live with you," Myra said.

"What will your mother say about it?" asked the lady.

"Oh, she's tired of me, I guess. I like you very much; hadn't you better keep me?"

"Well, you may come in," she said. So Myra made herself at home and began housekeeping with her dolls in the bay window.

The lady had met Myra's mother, and she at once sent her maid to her with a note telling about Myra.

At supper she chatted happily with the lady and her husband; but after she was undressed and in bed—not her little crib close to mother's side, but a big bed in a room all alone—she wailed: "Oh, I must kiss my own mother good night. I can't live with you any longer!"

The lady tried to quiet her, but her cries grew more heartrendering, till at last she slipped out of bed, picked up her dolls, and ran to the door.

When it was opened she found her own mother standing there, and sprang into her arms crying, joyfully, "Mother, dear, you are the bestest after all!"—Mary A. Wood.

For a Little Girl of Three.

Moo, moo!
What can I do
For my sweet little girl of three?
I will eat the sweet grass,
I will give her a glass
Of my milk for her tea;
Moo, moo! that's what I'll do
For my sweet little maiden of three.

Mew, mew!
What can I do
For my little girl of three?
I will catch all the mice
And they shall not come twice
To the cake, you'll see;
Mew, mew! that's what I'll do
For my sweet little maiden of three.

Bow-wow!
I will go now
With my little girl of three;
I will make a great noise,
I will frighten the boys,
For they all fear me.
Bow-wow! that is just how
I'll guard my sweet maiden of three.

Neigh, neigh!
Out of my way
For my little girl of three!
I will give her a ride,
We will canter and glide
O'er the meadowy lea.
Neigh, neigh! that's just the way
I'll help my sweet maiden of three.
—St. Nicholas.

The Missing Five Cents.

Hold out his hand for the change, John's employer said: "Well, my boy, did you get what I sent you for?"

"Yes, sir," said John; "and here is the change; but I don't understand it. The lemons cost 25 cents, and there ought to be 30 cents in change, and there is only 17 according to my count."

John had applied for a situation and Mr. Brown had sent him out to buy some lemons before giving him an answer.

"Perhaps I made a mistake in giving you the money."

"No, sir. I counted it over in the hall to be sure it was all right."

"Then perhaps the clerk made a mistake in giving you the change."

But John shook his head. "No, sir, I counted that, too. Father said we must always count our change before leaving the store."

"Then how in the world do you account for the missing 5 cents? How do you expect me to believe such a queer story as that?"

John's cheeks grew red, but his voice was firm. "I don't account for it, sir; I can't. All I know is that it is so."

"Well, it is worth a good deal in this world to be sure of that. How do you account for the 5-cent piece that is hiding inside your coat sleeve?"

John looked down quickly and caught the gleaming coin with a cry of pleasure. "Here you are! Now it's all right. I couldn't imagine what had become of the 5-cent piece. I was certain I had it when I started from the store to return."

"There are two or three things that I know now," Mr. Brown said, with a satisfied air. "I know you have been taught to count your money in coming and going, and to tell the exact truth whether it sounds well or not—two important things in an errand boy. I'll think I'll try you, young man, without looking further."—Minneapolis Tribune.

Did Not See It.

Prof. Brander Matthews, along with his belief in spelling reform, believes in short words and in simple constructions. Apropos of simplicity, Prof. Matthews said the other day:

"In my youth I once passed the summer in the country. One of my friends, an elderly farm hand, paid a visit to New York during my country visit, and on his return I said to him, employing a word needlessly complex and long:

"'Well, Jabez, how did you like the metropolis?'

"'Wot say?' asked the old man.

"'How did you like the metropolis?' I repeated.

"'Twa'nt open,' said he."—Detroit Journal.

Taking a Census for Year 1920

(Continued from Page One.)

out how many lines will be needed, say in 1920; where each one of wires will, long before 1920, be provided with underground facilities. Many others which already have the underground mileage will have acquired much of it. The ideal is a conduit system reaching every block in the city, with a maximum of trench work. But again there are likely to be local conditions modifying such a scheme. Sometimes, for example, it may be better engineering to go some distance out of the way to avoid blasting a ledge or laying a conduit over a bed of quicksand.

A thorough switchboard study must be made in order that the complex system of lines may be properly interconnected. This is based on the types now prevailing in the Bell system, for the engineers recognize that whatever may be said in favor of the so-called "automatic" switchboard for very small exchanges in rural neighborhoods, it is unlikely to play an important part in the future. A series of about 7,500 service tests on manual switchboards and automatic switchboards operating under practical conditions in different parts of the country has shown that the manual system possesses a far greater degree of reliability than the automatic. Hence the familiar boards, with drops or signal lamps, according to the size of the exchange district, have been assumed.

Building plans follow. These must be so designed that the switchboards and their operators will be adequately housed. Offices must be provided for an executive force, with departments of traffic, construction and maintenance, the size of these depending upon the probable development of the district. It is also learned from the number of lines and from a study of the future traffic, about how many operators will be needed. The last named investigation concerns the probable telephone use of the community, including the growing importance of toll communications and the changing character of services, the lower grades of which tend to disappear as the telephone habit becomes fixed in a community. Such studies are an essential part of the calculations, for one operator with 100 lines at one exchange may be overburdened, while another with 400 at an exchange of different type may have just an ordinary load.

Not only is the number of operators predetermined but the extent of floor space which will be required for their lunch rooms, rest rooms and lockers. The size of the accounting departments is also forecasted, for the number of clerks and bookkeepers needed is proportioned to the lines involved and the messages handled. The specifications for exchanges which have thus been formulated, sometimes more than a decade in advance, are held in readiness to be turned over, with such emendations as have been necessitated, to an architect when the occasion for building arrives.

The theoretical plans, based on a long term of years, do not complete the telephone census. There then comes up the question of how much of the ultimate study must be utilized right away and how much can be left until demanded by the expanding business. That involves a second set of elaborate studies, generally based upon a period three years ahead.

Considerable sums of money will have to be set aside out of the savings of the American people in the next few years, in order to give them the telephone service for which they are clamoring. The necessity of spending this money wisely, instead of wasting it by haphazard methods, renders such forecasts as these now going on or lately completed among the companies of the Bell system of incalculable value.