

# IN THE FIELD OF ELECTRICITY

## Innovation in Telephone Rates.

**T**HE New York Telephone company has entered upon an interesting experiment. It is placing 600 telephones in as many dwelling houses and private apartments in the residence section just above and below Harlem river. No charge is made for putting in or taking out. The citizen who has ordered the telephone guarantees nothing. He simply pays 10 cents for each time he makes use of the same.

The novel feature is found in the method of payment. Mr. A wishes to speak to Mr. B. He drops 10 cents in a slot in the machine and calls central. If central connects him with Mr. B the dime drops into another receptacle, and becomes the property of the telephone company. If central cannot make the connection with B the dime rolls out. Mr. A puts it in his pocket and reserves it for a later chance. At stated periods an agent of the company comes around, collects the money and locks the box up for future use.

The company expects by this device not only to increase the use of the telephone, but also to save commission paid to the drug stores and other places used as pay stations. The citizen in whose house the automatic collecting machine is placed is provided with a package of postal cards, with which to request his friends to come in and use his 'phone. The more service it sees the more chance of its being left in on these advantageous terms.

## Automobile With Power Plant.

One of the great electric manufacturing companies has recently finished and tested a novel automobile. The car, which is of the Tonneau type, is propelled by electricity, but instead of having storage batteries it carries its own power plant.

A gasoline motor directly connected with an electric generator is arranged in front of the car, the generator being wired to an electric motor on the rear axle. The use of cams or cogs is eliminated, and the car has repeatedly been stopped and started on very steep grades, or stiff mud roads, which would inevitably have stalled the gasoline or steam motors of like power.

## Electricity on the Farm.

The large farmers of the west are taking a deep interest in power to supersede horses or oxen. Steam tractors are being used, open, however, to the risk of fire among dry crops.

On one of the large wheat farms of Dakota an experimental installation has been made which may lead to the development of the use of electricity in farming operations. Power is generated at a mill site three miles from the farm, and transmitted in the usual way to a power mast forty feet high, set in open ground.

At the top of this mast is connected a double conducting cable 500 feet long, this in turn is connected to the tractor mobile, which consists of a twenty-five-horse power motor on a heavy carriage. A spar ten feet high is carried on the carriage, with a universal joint pulley on top, over which the cable is led to a drum on the carriage, which automatically takes up the slack cable as the tractor approaches the power mast, the current being taken by suitable connections through the drum to the motor.

In operation the tractor is hitched to a gang plow, cultivator or harvester, the cable being kept by the action of the drum from sagging to the ground. With this length of cable twenty-five acres can be worked, and the results are so satisfactory that it is proposed to extend the system to cover 600 acres, which will require twenty-four masts at suitable intervals.

Furthermore, in spring wheat operations every day's delay in seeding after the ground can be worked is detrimental to the future crop, and the owners of this farm are considering the proposition of

installing arc lamps on these masts and carrying on their operations day and night at such seasons.

A dinner was given at the Waldorf-Astoria last week in honor of the twenty-fifth anniversary of the introduction of the incandescent electric light and the fifty-seventh anniversary of the birth of Thomas A. Edison. Mr. Edison was the guest of honor.

One end of the Commercial Cable company's cable was taken into the grand ball room of the hotel, and connected to the table at which the inventor was seated. By means of the old quadruplex instrument which Mr. Edison used many years ago when he was a telegraph operator, and which has been in the museum of the Western Union Telegraph company for a long time, he sent a message across the ocean to Marconi. Messages to all of the great scientists in both America and Europe were sent from the room where the dinner was held.

The deed of trust of the Edison Medal association was presented at the dinner. The association has raised a fund, the income of which will be applied annually to the striking of a medal to be presented to the student in electrical engineering in the United States or Canada whose thesis or recorded research shall be deemed most worthy. The Institute of Electrical Engineers will act as trustee.

## Electricity Direct From Fuel.

In a recent issue of Electricity there appeared an article taken from one of the daily papers describing an invention for generating electricity direct from fuel. The inventor, a resident of Newark, N. J., is elated, as he deems his invention perfected. This problem of obtaining power direct from coal and doing away with expensive and cumbersome machinery, is one that inventors and scientists the world over have been for years endeavoring to solve. Whoever accomplishes it successfully and designs an apparatus that is practical will be the means of revolutionizing the existing methods of generating motive power. But unless this Newark genius has finally hit upon the proper combination of elements the problem is far from solved. Thermopiles have been brought out in the past, for which great things were hoped and which to all appearances accomplished striking results in a small way. When, however, more was required of them than the operation of an electric fan or a door bell, fatal defects made their appearance. The internal resistance was too great and the alloys made use of became oxidized. The Newark inventor claims that the efficiency of his apparatus, which he calls a dynelectron, is 45 per cent as compared to 84 per cent when electric current is generated by means of the steam engine. It is to be hoped that the dynelectron will be able to accomplish what the steam engine and dynamo now does, but until such is actually proven to be the case we are inclined to be rather sceptical of the ability of this new device.

## Express Traffic On Trolley Lines.

By far the most important feature of the proposed consolidation of the express companies of Boston and its suburbs is that which proposes to use the electric railway lines for express traffic. Seventeen of the smaller electric roads of Massachusetts are at present availing themselves of the privilege granted by the general act of last year and are using freight cars for the carrying of merchandise and baggage. "One great obstacle at present stands in the way of the general adoption of the system," says the Boston Transcript. "That is that the streets of the large cities are already so crowded with cars for the transportation of passengers and mail that it is feared that the running of express cars would be a serious inconvenience to the general traveling public. The claim of street railway managers that the general public would be

benefited by the admission of electric cars for carrying freight, because the revenues derived from this source would be in part applied to the improvement of the railroad service, is offset with the probability that worse congestion of cars than at present would result in the important routes of a large city like Boston. It is of no use to argue that the express cars would cause less congestion and interruption to traffic than mail cars, for the reason that the latter must be run anyway. The express cars would cause a purely additional burden.

"There is, however, a great opportunity before the electric lines running into the large cities in the transportation of market gardening products during the night and early morning hours. Before 6 o'clock there would be no great interference with passenger traffic, and the rule is for the marketmen to have their products in Boston before that hour. Such a system would be of great benefit to the market gardeners, and the cars could be warmed in winter or kept cool in summer, as might be desired. Garden products would arrive in Boston quicker and in better condition than at present, and, with storage facilities for cars in Boston, there would be no necessity of running cars at other hours of the day when the streets are needed for passenger traffic. There seems to be little doubt that a system of express cars, operated by night, would be of great benefit to Boston and the street railroads, and this new step forward in modern improvements, with the restrictions outlined above, seems entirely feasible."

## Stationary Power from Automobile.

A Wisconsin firm has recently introduced an appliance by means of which any automobile may be readily used for stationary power development. A small platform is set on a level with the floor of the shed or shop, and the auto is backed upon it, until the driving wheels rest upon two small, wide faced wheels with slightly corrugated surfaces. The carriage is then clamped, by a simple device, in this position.

The shaft which carries these wheels also carries a pulley on its outer end, and on starting up the motor the motion is communicated to the small wheels on which it rests, and thus the pulley, which can be belted to any apparatus as desired. It is asserted that a very efficient lighting plant for a residence can be operated in this way—and the auto can be placed in position, or taken therefrom, as readily as going into, or out of, a carriage house.

## Protected Third Rail.

A protected third rail, which has so often been advocated for the elevated system in New York City, but has as often been judged a practical impossibility by engineers of the Manhattan Elevated company, is permanently installed for seventeen miles on the electric road in Switzerland, between Le Fayet and Chamounix. This protected system is entirely successful, and has been beset by none of the difficulties put forward by those opposed to its local adoption. The protection is afforded by an insulated box of paraffined beech, which makes contact with the rail impossible except through the narrow slit, at the side toward the car, through which the metal connection with the motor of the car is established. The top of the box is fixed with iron distance pieces which support it only on the off side of the box, thus allowing the above mentioned opening. No connection would be established, therefore, with the live rail unless something was forced in through this slit. Anyone could walk over the rail by stepping on the box with perfect safety. Although it might naturally be supposed that such a support would not possess sufficiently high insulating qualities for the pressure employed to prevent considerable leakage, it

is computed that the maximum loss in this system is less than one ampere per yard. However, the leakage, it is asserted, decreases with a fall of rain or snow, owing to this action washing off the dust and accumulations that have taken from the strength of current.

## Railway Train Telephony.

Though the activity of inventors in seeking a way to establish electric communication between stations and moving trains has not yet led to the adoption of any such system, the Electric Review still considers it a possibility. In its last issue that periodical remarks editorially that Edison and other experts have shown a preference for induction rather than contact for leading the necessary impulses into the instrument on car or engine. The opinion is expressed, nevertheless, that the trolley wheel and overhead wire or transmission from rails to car wheels may yet be found equally feasible.

Another development of the near future, to which our contemporary makes no allusion, will doubtless have some bearing on this question. The substitution of electricity for steam on many railroads in America and Europe within the next five or ten years may be looked upon as a practical certainty. Whether the current be conveyed to the trains from the power station by the third rail or by overhead wires, the track proper will undoubtedly be used as a means of returning it. With the right sort of apparatus and with a special control of voltages, the same conductor can be used for more than one current. Edison's quadruplex system of telegraphy is a familiar illustration of the fact. Whether so light a current as is needed for telegraphy or telephony can be conveniently handled in direct association with one powerful enough to drive a railway train is another question. The necessity for employing a separate route for the electric currents of a block signal system, where electricity is used for motive purposes, has already been foreseen. In like manner an independent conductor would be required to light a red signal in the engineer's cab to warn him of danger ahead if that method of protection were adopted on electric roads. It is obvious, therefore, that if communication is going to be maintained with moving trains by telegraph or telephone, track circuits cannot be utilized on the railways of the future.

So deafening is the din in a steam locomotive cab that a telephone there would seem to be useless. The motorman's apartment on an electric train—on one of the elevated roads, for instance—is less noisy; but even in that a signal appealing to the eye would probably be more effective. A conductor might be able to hear telephonic orders, especially if his instrument were placed in a booth whose walls had been rendered partially sound proof. That plan of issuing orders from a central point would, of course, involve drawbacks not experienced hitherto. Some of these can be foreseen. As he would not know precisely when to expect orders, the conductor would be obliged to rely upon another employe—an operator, for instance—for indications that he was wanted, and it might take a minute or two to find him. Again, if half a dozen trains were controlled by telephones connected trolley-wise with the same wire, misunderstandings might arise as to the particular conductor who was called.—New York Tribune.

## Busy Electric Lines.

The electric railroads last year carried three times the population of the world. The cars ran eleven times the distance between the earth and sun. The capital invested is twice as much as the United States bonded debt, and the gross earnings are \$50,000,000. Taxes were paid amounting to \$13,000,000.

