IN THE FIELD OF ELECTRICITY

THE latest census bulletin is devoted to "Central Electric Light and Power Stations," for the year 1902. In transmitting the report to the Department of Commerce, the statistician says:

"At the time of the enumeration there were (in this country) 3,620 central electric stations in operation. The cost of their construction and equipment amounted to $604,740,352. The gross income for the year was reported at $85,709,605, and the total expenses at $68,081,375. These stations furnished employment to 23,330 wage earners, who received $14,983,112 as wages during the year. The power plant equipment consisted of 5,930 steam engines, with 1,379,941 indicated horse power, and 1,390 water wheels with a stated horse power of 1,624,980. A noteworthy feature of the development of this industry has been the installation of plants operated under the control of municipalities. There were 815 of these plants constructed and equipment was reported at $22,020,473. They gave employment to 2,467 wage earners and paid $1,422,341 in wages."

Outlook for the New Year.

In the course of an article on the electrical progress made in 1903 and the promise for 1904, Thomas Commerford Martin, editor of the Electrical World, says: "New electric lights have been added to those now familiar. Stores and streets are shining with light of vacuum tubes, in which nothing is consumed but the current. The established forms are challenged by newcomers that threaten to oust them from a part of the field.

"The remarkable successes in electrical traction in 1903 have set one seal of distinction upon the old year. On the Zossen road in Germany men have traveled in electric cars at a speed of over 130 miles an hour, which means a capability of hurling us comfortably from New York to Chicago in eight hours. It may not pay commercially in our generation, but the New York Central has made up its mind it will pay right now to change from steam to electricity.

"The saddest of all is the revelation made by the Chicago automatic telephone exchange that we have got to say 'goodby' to the polite and timid young 'hello' girls at central."

Traffic on Interurban Lines.

The Indianapolis interurban roads having taken a large part of the local passenger traffic from the steam roads running out of the city with which they come in competition, are now making heavy inroads in the local freight and express business.

An investigation reveals the fact that practically all the commission house business and a large part of the lighter freight shipments made in less than carload lots, to points within thirty or forty miles of Indianapolis, have already gone to the interurban roads.

The manager of the freight and express department of one of the larger interurban companies doing business in and out of Indianapolis, after a careful estimate, places the total commercial value of the interurban shipments out of that city at $500,000 a month, and estimates the gross receipts for hauling this freight and express at $12,000 to $15,000 a month. He estimates the total commercial value of shipments made out of Indianapolis during the year just closing at over $5,000,000, and the gross earnings of the interurban, for handling this freight, at about $140,000 to $150,000.

It is exceedingly difficult to get at net and gross receipts, as each of the interurban companies seem to have a different basis for figuring expenses and earnings in handling this business. One or two of the companies make the assertion that there is no money in the business, as it is handled at this time. Charles L. Henry of the Indianapolis & Cincinnati Traction company, and the Indianapolis & Shelbyville line, before the Board of Public Works made this statement.

On the other hand, it is interesting to learn, through trustworthy sources, that the Indianapolis & Northwestern, the Indiana Union Traction and its Indianapolis Northern, that handle all freight shipments at night, figure that in so doing that are utilizing energy that otherwise would not be used. It is necessary to keep the power plants in operation in almost all departments every hour, day and night. The Union Traction company, for one, does most of its freight business during those hours when there is no passenger traffic, or it is lightest.

Whatever may be the value of this rapidly developing department of interurban business, as viewed by the companies, at least three things are manifest. The first of these is that the interurbans are taking small local shipments away from the steam roads, the second is that the new service is increasing the trade of Indianapolis commission and wholesale merchants, and the third is that the service is developing new trade for Indianapolis and is already taking much business away from Chicago.

Still other things are evident. They are that the interurban companies need their own freight houses; that when freight houses are provided business will increase still more rapidly; that, as the companies at present are handling the freight business—which they choose to term "express" business—they are imposing, to a certain extent, upon the city of Indianapolis in using the streets for loading and unloading freight.

The Indiana Union Traction company, which is doing probably 40 to 45 per cent of all the interurban business in and out of Indianapolis, is already at work building and furnishing freight depots in all of the cities along its line, with the exception of Indianapolis. New freight depots have recently been opened in Marion, Muncie, Elwood, Alexandria and the smaller towns. At Anderson a temporary depot is now used. It will be replaced by a large, permanent one next year. It is known that the company fully realizes the necessity of having a depot in this city and has been figuring on several desirable sites.

Almost all the companies now doing a freight business in and out of the city are handling it from their passenger stations. As a rule, shippers load into the cars and receive shipments from them. This means the blocking of streets and makes necessary doing practically all the business in the city's streets.—Indianapolis News.

Radium Cheaper.

Dealers complain that $3,750,000 an ounce, widely quoted as the price of radium, is too high. They say it may be impossible to buy an ounce at that sum, because no one possesses an ounce. The present price is 5 guineas for five milligrams, that is $148,825 an ounce, in France, England and Austria. Chemists are working wherever they think it possible to extract a milligram. Prof. Himstedt of Freiburg has made an interesting discovery. His experiments have proved that all the products of water and petroleum sources yield a heavy specific gas, which closely resembles and is probably identical with the emanation of radium, from which he concludes that a very large number of bodies are imbued with a quality emitting a kind of Becquerel rays.

Puzzling Electrical Find.

Discoveries are now coming thick and fast. One which unfortunately has escaped is puzzling a well known electrical investigator. He was experimenting a few weeks ago with a large vacuum tube containing, as he supposed, vapor mercury, such as is used in an electric glow light. He connected the battery and obtained a brilliant white light. He disconnected the battery and to his astonishment the tube continued to shine as bright as ever. The wonderful light continued for ten days, the experimenter all the time trying to solve the mystery. Then the whole connection was accidentally broken and all attempts thus far to reproduce it have failed.

Electricity Instead of Coal.

Owing to the increase in the price of coal during the last few years Mr. Thormann, a prominent Swiss engineer, wished to find out whether it would not be an advantage to use electrical energy, furnished by hydraulic plants, over the whole of the railroad system of Switzerland. After investigating the subject he published a report which has awakened considerable interest and will no doubt bring about some practical results in this direction. He finds that the substitution of electricity for steam on the railroads is quite practicable and has many advantages, although it will not bring about any considerable reduction in the cost of operating the roads. The five main railroads in Switzerland require over 30,000-horse power daily. In order to organize a complete electrical service it will be necessary to obtain about 60,000-horse power in the shape of the alternating current of high tension, not counting the reserve supply, which is indispensable. Not taking into account the considerable number of falls which are not utilized in the country, there exist already twenty-one large hydraulic plants which can give a total of 86,000-horse power. These include the plant of Siel, near Linsiedl, which has a capacity of 20,000-horse power; the Laufenburg plant, on the Rhine, giving also 20,000-horse power; and five others, giving each 5,000-horse power. He enumerates twenty-one plants, which will be more than sufficient to supply the energy for the Swiss railroads. The cost of changing over the system would of course be considerable. It is to be noted, however, that the adoption of the electrical system would have the great advantage of doing away with the present consumption of coal, which is now imported, and that the use of hydraulic energy would be of great benefit in developing several branches of manufacturing. The publication of Mr. Thormann's report aroused considerable attention in different quarters, and already one of the railroad companies has applied to the government for an authorization to use electric trains on a trial stretch of road twelve miles long.

Locomotives vs. Electric Motors.

Whether the electric suburban railways will deprive the steam railways of their suburban traffic is a much disputed question which the Railway World is disposed to answer in the negative. In England the steam lines have adopted to some extent electric railway methods for handling suburban traffic. They thus get more frequent trains. But there is this in favor of the steam railways, that in proportion as the passengers and freight traffic increase the roadbed equipment and facilities for handling traffic on the electric lines must increase in cost till the electric line has no advantage in point of cheapness over the steam line. The distances traveled by commuters are increasing and they demand convenient terminal service and comfortable accommodations—a demand which only the steam roads at present satisfy. "High speed for distances of twenty miles," says the World, "cannot be expected from the facilities the electric lines now have." The latter follow the crooks and turns and ups and downs of the streets and country roads. Their terminals are the street corners and cross roads. Within ten or fifteen miles of the city the trolley may gain supremacy, but outside that radius the future, it is claimed, is with the railroads. "No apprehensions are being felt," says the World, "by the steam railway interests at large over the rapid extension of electric traction. It has its place and this it will fill without serious injury to the steam railroads. In fact, so far from being a competitor of the railroad the trolley is likely to increase materially the revenues of the steam rail transportation agencies. This it will do indirectly, but none the less effectively, by cultivating the habit of travel which grows by what it feeds upon. The first steps into a new habit are always the most difficult, and we all know from experience that people who would never, in the first instance, patronize the railroad are led to take long journeys by the habits of travel acquired on the electric car."

Theory of Electrolysis.

A recent number of the Electro-Chemist and Metallurgist contains an article by Mr. W. C. D. Whetham on the present position of the theory of electrolysis. The investigations which led up to the theory of electrolytic dissociation and the modern convective views of electrolysis are traced, and it is clearly shown that a vast number of important observations are easily explained by the modern views. As the author points out, experiments on the comparison of the electrical and the osmotic values of ionization are of little use from the point of view of the controversialist seeking arguments for or against the ionic dissociation theory. The deviations between the two values are, however, in most cases easily explainable by a consideration of the interionic forces, which probably exert an effect even at dilutions at which the intermolecular forces are negligible, and, further, of the complexions which are so often formed in solution.

The Uses of Adversity

Senator Joseph W. Bailey of Texas was in New York for some time last summer on legal business. While he was there he became acquainted with many of the men of big affairs.

"I am convinced," the senator said on his return to Washington, "that it is more fun to be a poor man than a rich one.

"Now, there may come times when I want $500 and it worries me to get it, but I can tell you that it doesn't worry me half so much as it worries a multi-millionaire to get a million or two when he needs ready money.

"He takes his story to a banker. The banker says, 'List me your securities.' Then the banker picks out the choice ones, makes a call loan and as soon as he sees the millionaire is hard pressed again calls the loan and grabs the securities.

"You can't tell me that the poor man is not the happier of the two."—Saturday Evening Post.

Wisdom of Mother Goose

Jack and Jill went up the hill to get a pail of water.

"That just shows the cussedness of fate," he said, as they waited for the ambulance. "If we had gone for beer, there would probably have been a cop on the corner to see we got it safely."

Sadly, they pondered on the trials of the straight and narrow path.

Old Mother Hubbard had gone to the cupboard to get her poor doggie a bone.

"It doesn't matter," remarked the canine politely, "I heard that young man say he was going to call on your daughter again tonight."

Here we see the true history of how the catastrophe was averted.—New York Sun.