



Moral Standards of Industry.
Those engaged in sociological work state that the attitude taken by railroads and steamship systems in regard to the use of intoxicants has been of great assistance to them in their efforts to produce a higher moral tone among young men. No steamship company will employ a man who is known to

be addicted to the use of intoxicants, and the train dispatcher who has hundreds of lives and thousands of dollars worth of property entrusted to his care must be a man of good habits and steady nerves. The standards maintained among employees in these regards serve as examples in sociological work, those interested will explain.

TESLA PREDICTS MORE WONDERS

Annihilation of Space Will Be Work of the Coming Generation.

WIRELESS WILL DO IT

Transmission of Intelligence and Energy and Transport of Materials.

EXTENSION OF SIGHT

One Person Will See Another as Though That Other Were by His Side.

SOLUTION FOR AIR TRAVEL

Inventor Also Declares Electricity Will Cure Mental Ills of Children.

A past generation saw the invention of the steam engine and the epochal change which it wrought in the world of industry. Methods and appliances which were regarded as permanent as the mountains passed with the coming of steam. Many of them are remembered only as curious remnants of a cruder mechanical age.

Then came the introduction of electricity to practical purposes. Now the world depends on this invisible agent as the nerve force sustaining it on its onward march. Scientific primers that were printed within the recollection of older men and women speculated about this development of electrical force and guardedly discussed its possibilities. Predictions made as to the future use of the electric current and its commercial possibilities seem absurdly conservative now, when scientists reveal them in the light of actual developments.

What is to be the big change of the coming age? Has science reached the limit of its resources? Along what line will the next developments come?

Man has overcome many of his physical limitations, scientists explain, by chaining the forces of nature and making the earth and the air work for him. He has multiplied his muscular strength a billion times, but there is one problem the solution of which will be the great work of the coming generation. That is the annihilation of distance. Wireless will do this, says Nikola Tesla, the inventor.

"In the last few years many wonderful possibilities have presented themselves," explained Mr. Tesla, "but, in my opinion, none will be of such far-reaching consequence as the complete annihilation of space. This will be accomplished in three fields, the transmission of intelligence, the transport of bodies and materials and the conveying of the energy necessary to the sustenance of modern life.

If carefully analyzed all the clashes between individuals and nations and their disastrous results can be traced to the physical impossibility of getting into close contact. Annihilate distance in thought and action and you will give unbounded opportunities to the economic, healthful and peaceful development of mankind. This annihilation of distance will be brought about by the transmission of energy without wires.

"As regards intercommunication a great step has already been made, but a fuller realization will come when a system is introduced enabling any person to reach any other on the globe, and not simply through a spoken word, but visually. I mean by this that not only must there be a telephone connection from one to any other point, but also a perfect transmission of images which will enable one person to see another as though that other were by his side.

"The next step will be the transportation of bodies and materials through the medium of flying machines operated from wireless plants. The introduction of power for this purpose will do away with all the limitations that now confront aerial navigation and make travel through the air entirely safe and comfortable. The third step will take a much longer time for realization but will ultimately be accomplished by the general introduction of wireless power for all necessities."

Mr. Tesla pictured an age where the great operations of commerce and industry would be vitalized by central distributing wireless stations. There are in the world many natural sources of tremendous power. The falls of Niagara alone might be made to supply a fifth of all the power used in the United States. The present difficulty is that of electrical transmission by wire. It is not only the heavy cost of long lines of copper wire that hampers the distribution of the energy that might be generated at the great falls, but power can only be carried over wires for a comparatively limited distance. Wireless transmission would take that power and carry it to the ends of the earth with little loss.

The scientist points out that the power that could be derived from the waterfall of the Columbia River and the great falls of Zambesi in the heart of Africa could be brought to New York city and made to run the subway trains.

Ocean going boats would no longer need to carry their thousands of tons of coal. This fuel might be consumed in a central station, where the expense and waste of a dozen different handlings would be eliminated. If the ship were delayed by accident to her machinery in midocean there would be no fears that the coal supply might not hold out. The ship would be in constant touch with her source of energy supply as well as in communication with the outside world at every point of her course.

The possibilities of airship travel have so far been limited by the fact that aeroplanes and airships have no room or carrying capacity for the fuel necessary to an extended trip where there was no possibility of reaching a base of supplies. Such a trip would be a fight over the ocean. Wireless power would end this difficulty, Mr. Tesla explains. The aeroplane would be drawing energy from a central source, and it would make no difference whether it remained in the air an hour or a year so far as power supply went. Such airships might be controlled from the land as easily as though the operator were seated at the steering wheel. This, however, would not be as satisfactory an arrangement, Mr. Tesla thinks, as to have an engineer with the machine at all times.

But why transmit power when the sun gives it so abundantly at every point? Why not harness sunlight?

"It is true that the sun's energy might be captured and made useful at any spot," said Mr. Tesla, "but it does not take long to see that it would not be as useful as the transmission of energy from a central plant. For the former would lead to individual independence, while the latter would tend to bring about a close union of interests and harmonious cooperation. It would make war impossible."

Anybody whose imagination is vivid enough can make a prediction. It is easy enough to think up situations which would be pleasant and make for the betterment of the world. Mr. Tesla states his forecasts are founded on a sound experimental basis.

"These are not forecasts," he replied in response to this objection, "they are facts. Experiments and demonstrations to this effect have already been made by me, and if it were not for the unavoidable inertia of human movement the idea would have materialized and I would be telling you of still greater wonders."

"Water power alone is not sufficient for the needs of man, although it will go far toward increasing his opportunities. Coal is still our chief source of power, and a small part of its wasted energy is greater than all the water power available in the world. For instance, the manufacture of iron and steel in this country entails, according to my computation, an annual loss of power which would yield if properly exploited an annual income of not less than \$300,000,000. I feel that a solution has been found, and in the near future a new resource will be opened up which will be of incalculable effect."

Nikola Tesla does not think that Prof. Ramsay's notion of burning coal in the mines or as it is found in the earth would be practical.

"The idea is ingenious," Mr. Tesla went on, "and not at all impractical, but on careful computation it will be found that more power can be derived by mining coal and burning it under proper conditions than by using it in the manner proposed by Prof. Ramsay. Another problem presented by his scheme would be that of finding employment for countless thousands who are now earning their living in mining."

He believes high frequency currents will have an important use in the future. He explains he has noticed that he has derived great physical benefit in working with them. This suggestion is made that here is a possible means for improving the mental makeup of children. The problem of the defective child has been one that has long baffled social workers, Mr. Tesla points out.

Will it be possible by these very currents which are used for wireless purposes to increase these children's mental powers and give them a fairer chance in life? Mr. Tesla thinks so.

On this point there have been already a series of experiments. Prof. Svante Arrhenius, the noted physicist of Stockholm, it is announced, has completed a series of investigations to prove that electricity has a marvellous effect on the growth of children. Two groups of children, it is stated, of about the same physique, age and mentality were placed in two rooms which were exactly alike except that in the walls of one of the rooms there were wires concealed which carried high frequency, alternating electrical currents. This was done at a school, and neither the teachers nor the pupils knew any such experiment was being conducted.

Despatches from Stockholm state that at the end of six months the electrically treated children had an average of an average and the children who were not subjected to the electrical influence had grown only 1.16 inch. Making twenty the standard of perfection, the electrified children reached in their studies an average of 18.4 and fifteen attained a perfect mark. The unmagnetized children attained an average of 15 and only nine of them got perfect marks. When questioned the teachers who had classes in the electrically influenced room said their faculties were quickened and their powers of endurance increased.

"Ever since my first demonstration with these currents, which attracted worldwide interest, I have noticed their beneficial action," said Mr. Tesla, referring to the Stockholm experiment. "They are undoubtedly destined to create a great revolution in therapy and medical treatment. Dr. Arrhenius is a skillful experimenter and his announcements may be relied upon. I have long been convinced that high frequency currents are useful in certain nervous afflictions and that they assisted mental effort. But that growth can be increased through their agency is an entirely new observation."

"If what already has been done can be used as safe foundation in predicting what is to come we are certainly on the verge of realizations which may completely change our mode of life. I am a little pessimistic, however, as to the part that radium is to play in the new advancement. Believing as I do that radium is much the same sort of an illusion that phlogiston was a century ago, I am forced to this conclusion. It was the accepted belief at that time that a social element designated as phlogiston was involved in combustion and the error persisted until Lavoisier discovered oxygen and showed the part it played in this phenomenon."

"In my papers published in the Electrical Review in 1895 and 1897, several years before the discovery of radiferous ores, I described radiations of this sort, although produced in a different manner, and pointed out their salient properties, and I still hold the same opinion, believing radium to be due to a process akin to combustion in which not only is an all pervading medium much finer is involved. According to this view, there is no virtue in the radium ore itself, but it is merely the result of its combination with a medium. I think one may safely discount many of the claims made for the future uses of radium."

Mr. Tesla says he has perfected a practical system of wireless power transmission and that he has secured actual results at his experimental plants in Colorado and Long Island. He holds that he has made a satisfactory demonstration, one which guarantees its commercial application. This has been the cumulative work of years.

"When I was a boy," Mr. Tesla said, "I lived near a mountain and one of my pleasures was to build small water wheels and set them in motion in the streams that came down the sides of the mountain. I would use the power from these wheels for turning small machines. It was always my ambition to see the power of a waterfall chained and made to work. I used to tell my uncle that some day I would see the greatest falls in America. He laughed at me and said I would probably never get to America, let alone see Niagara Falls."

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