WIRELESS WAVES

The Electric Voice That Speaks Through the Ether.

SETTING UP THE VIBRATIONS.

This Is the Work of the Oscillator, Which Is the Electric Mouth, and Its Message Is Caught by the Resonator, Which Is the Ear of the Apparatus.

More truly than any other telegraphic device, the wonderful wireless is a speaking voice. It makes itself heard just as the human voice does by a series of waves moving freely through space.

When I speak my voice is sent out in undulations of varying length and frequency through the air. When the wireless "speaks" its voice is conveyed by undulations in the ether, which is a more refined medium than air, carrying the waves of light and electricity as the air carries those of sound.

The oscillator of the wireless is a "mouth," sending out undulations in the ether as our mouths send out undulations in the air, and the resonator of the wireless is an "ear," catching the etherial waves as they impinge upon it, as our ears catch the atmospheric waves that strike them.

We see nothing wonderful in vocal sounds, because nature gave us in our needs one instrument to produce them and another to receive them. But she left us to find out for ourselves how to produce and receive "vocal" waves in the ether. Since we had to make the instruments that deal with them the etheric waves seem to us marvelous, although they are in principle no more marvelous than the waves of air.

Man began to use electricity for conveying intelligence by sending a current of it along a wire. He pressed a button at one end of the line, and the electric current passing along the wire induced a corresponding motion in a tapper at the other end. It was a roundabout way of employing an agency which we now know can be employed more simply and directly by throwing away the wires and making the electric waves "speak" straight through the ether.

It is true that the language employed does not consist of the words of any spoken tongue, but it is one that can be directly translated into any other known to man, and so it is the most universal of all languages.

Now, let us see how it is employed. First as to the electric "mouth." When a charge of electricity is accumulated on a "condenser" a similar but opposite charge is induced upon another condenser placed near. The air between them acts as an insulator because it is a poor conductor of electricity. But when the charge attains a certain degree of intensity the strain upon the air becomes too great, and a spark passes between the two condensers, by which equilibrium is restored between them.

The passage of this spark produces, so to speak, a shock in the ether, which, like the explosion of a gun or the utterance of a sound, sets up a series of waves in the surrounding medium, which radiate away on all sides. These waves in the ether produce the electric "voice." If the sparks are regulated in number and frequency the consequent waves are similarly regulated. An instrument for the production of such waves is called an oscillator or exciter. It is a kind of vocal apparatus for speaking through the ether instead of through the air.

But just as we should have no knowledge of the passage of sound waves if we were not provided with ears to hear them, so the electric waves would go unregarded if we had no apparatus for receiving them.

The receiving apparatus is called a resonator, or detector. It may be situated hundreds of miles from the oscillator, but it will catch the waves as they undulate to it through the ether, and it can be made to reproduce them in an audible or legible form by causing them to operate a Morse dot and dash instrument, as in ordinary telegraphy by wire.

But the electric voice and the electric ear are in some ways more manageable than the human voice and ear. We can only produce and hear air waves of a limited range of frequency, and we cannot do much to alter that limit.

Sound waves vibrating less than forty times a second or more than 40,000 times are inaudible to us. But electric waves varying in frequency from a few hundred up to hundreds of millions a second can be rendered perceptible, and it is also possible so to construct the instruments that they will send forth and receive particular ranges of waves and be mute and deaf to others.

Then the distance over which the electric waves can be detected is almost infinitely greater than that of ordinary sound waves. It takes a strong voiced man to make his voice audible across a little river, but, as everybody knows, the electric cry of a ship in distress can be electrically heard from the middle of the Atlantic ocean. And there are enthusiasts who predict that before very long we shall be able to speak by wireless to some other planet, if only there is somebody there to hear and understand us!—Garrett P. Serviss in Spokane Spokesman-Review.

There is no act, however trivial, but has its train of consequences, as there is no hair so small but casts its shadow.

BIRTH OF THE GRAND CANYON.

Nature's Mighty Forces That Wrecked the Crust of the Earth.

"How do you explain it?" inquired one on meeting Sir John Murray, the eminent English geologist and president of the Royal Geographical society, referring to the Grand Canyon of the Colorado. This was briefly the answer, though not in his words:

"On either side of the wide plain extending from sixty to a hundred miles to the right and left of the canyon evidences of severe volcanic action are visible. In the center was a plateau, but you now look down upon it as the vast chasm of the canyon. Thrice the volcanic forces of nature, operating on either side, violently and with tremendous power, forced this plateau upward, and finally in one cyclopic, tremendous upheaval the plateau parted, and the Grand canyon, the wonder and mystery of the world, was born.

"Imagine a loaf of dough rising silently under the continuous pressure of the yeast until finally the crust is broken and the loaf divided into two. Then look at this broken crust of mother earth. In the early days a vast area embracing a great portion of the interior of the American continent was covered with water. It was a great sea. All over the canyon fossil oyster shells proved this contention. The Grand canyon opened; the waters of the inland sea rushed through in a tearing flood and carved the fantastic forms you now see."

The questioner further inquired of Sir John, "No doubt this was all very remote, in the early ages of the world?"

"Oh, no," said Sir John. "Modern, quite modern—not more than twenty or thirty million years ago!"—Leslie's Weekly.

TRUE HORSE MARINES.

They Helped Bolivar Out When He Was In Need of a Fleet.

The llanero of South America lives on horseback, trades, buys and sells on horseback, and during the war with Spain the llaneros contributed much toward achieving the independence of both Venezuela and New Granada. In "Up the Orinoco and Down the Magdalena" Mr. H. J. Mozans tells of an occasion when it was necessary for Bolivar's army to cross the Apure in order to engage Morillo. But Bolivar had no boats, and the Apure at this point was wide and deep.

The Spanish flotilla was guarding the river at the point opposite to the patriot forces. Bolivar was in despair. Turning to Paez, he said, "I would give the world to have the Spanish flotilla; without it I can never cross the river."

"It shall be yours in an hour," said Paez.

Selecting 300 of his llanero lancers, all distinguished for strength and bravery, he said, pointing to the gunboats: "We must have these flecheras or die. Let those follow who please."

At once spurring his horse, he dashed into the river and swam toward the flotilla. The llaneros followed him with their lances in their hands, now encouraging their horses by swimming beside them and patting their necks, now shouting to scare away the crocodiles, of which there were hundreds in the river. At last they reached the other side and sprang from their horses' backs on board the boats, headed by their leader. To the astonishment of every one who beheld it, they actually captured the entire flotilla.

The Old, Old Problem.

New times, new problems. Behold how even the old world is smitten with modernity and its horrors as revealed in "Servantgalism; or, What's to Become of the Missuses?"

Servant Gal—Oh, if you please, ma'am, there was one other thing I should like to 'ave settled.

Lady—Yes?

Gal—Where do you go to the seaside in the summer? Because I couldn't go to a dull place or where the hair wasn't very bracing.

For the enchanting picture that illustrates this consult Punch, volume 24, 1853.—New York Tribune.

Burning Up Gold.

Burning a small piece of gold leaf is a custom observed by the Chinese at certain anniversary celebrations, and it is estimated that gold to the value of $10,000,000 is destroyed annually in this way. This estimate is based on the assumption that each individual of a total population of 440,000,000 burns at each of two anniversaries a piece of gold leaf weighing .308 grain, making a total of 271,000,000 grains. A five dollar gold piece weighs 129 grains.

Quite Safe.

"So he accepted a job like that, did he? Well, I did not know that a man of his standing would accept such dirty money."

"Oh, he washed his hands with an antiseptic solution before he took the fee."—Baltimore American.

How It Happened.

"A letter addressed to me and marked 'Personal' came to my house yesterday, and my wife didn't open it."

"How do you account for it?"

"She was out of town attending the wedding of one of her cousins."—Chicago Record-Herald.

Ordered It.

She (in restaurant)—I'm so hungry I could eat a house! He—Then that's what we'll have. Waiter, a porter house, large, for two!—London Telegraph.

What is just and right is the law of laws.—Latin Proverb.

ABOUT A DOLLAR A BITE.

Prices Used to Soar Sky High In the Cafe Anglais In Paris.

In the palmy days of its existence the Cafe Anglais in Paris was greatly affected by wealthy Americans. In this resort the charges soared sky high, and it was considered bad form to ask the price of anything on the menu. You simply ordered what struck your fancy and were expected to pay smilingly when the bill was presented.

Julius Chambers was invited by a friend to dine there once, and in the Brooklyn Eagle he tells of his experience:

"Being asked to order the dinner for my friend, I made it as simple as possible. A bisque soup, salmon with young potatoes, one small capon with fine herbs, asparagus, tarts, Camembert cheese and coffee. My friend did not drink wine, and I ordered for myself a bottle of 'the red wine of the house.'

"Everything was excellent, and I fully expected the bill to be 80 to 100 francs ($20). Imagine my horror, therefore, when the bill was 300 francs. Sixty dollars! I was indignant, although my host merely laughed. I sent for the maitre d'hotel and demanded an itemized bill. He was very indignant; said such a request was unheard of. After much delay the 'addition' appeared. I only remember that it added up all right and that the charge for the chicken was $20 and $1 for the wine (worth about 60 cents). My host only smiled and gave the waiter a napoleon tip.

"A Chicago acquaintance came to me one afternoon not long after the above experience, his eyes bulging and his temper high. He said he had gone to the Cafe Anglais, ordered luncheon, beginning with cold salmon. A whole fish was brought, and after a small first helping he liked it so well that he took a second spoonful. He noticed that the fish was not taken from the table when the rest of his meal was brought. When he got his bill he was charged for the whole salmon—60 francs ($12). He was assured it was a rule of the house that a second helping indicated he wanted the entire fish, and a charge of that kind was made.

"I laughed at him, and the more I laughed the angrier he got. His luncheon cost him $23, and he could have had the same at the best restaurant in New York for about $4."

Very Unusual.

"You newspaper fellows are ordinarily hard pressed for funds, are you not?" asked the genial stranger.

Our natural pride forbade us to agree with this outsider's conclusion. So we said:

"Why—er—not necessarily. What makes you think so?"

"I'll tell you. I am acquainted with a member of your profession, and a fine chap he is too. The other day I wanted to talk to him, so I called him up on the phone and asked him if he would lunch with me. He accepted, and at the appointed hour we sat at the table. I opened the conversation thus:

"'Well, what's the news? Anything unusual in your line?'

"'Yes,' answered the reporter—'this!'"—Cleveland Plain Dealer.

The Lost Leader Writer.

The story is told that when the new proprietor of the London Times first went over the building in Printing House square he saw a door covered with cobwebs which wouldn't open. After they had waited a long time an aged caretaker was found burdened with enormous keys, one of which fitted the rusty lock, and after great straining turned it. Inside were dust and ashes and cobwebs and—a skeleton! It was leaning over a table with a pen in its bone fingers. "What on earth is this?" they asked. "Oh, I remember hearing that in my great-great-grandfather's days they lost one of their leader writers," said the old key bearer. "He must have got locked in!"—London Sketch.

Moving a Billiard Table.

Probably the most remarkable journey ever made from Cattaro to Cetinje, in Montenegro, was that of an English billiard table. Fifty sturdy porters were required to carry the table over the mountain, and a pilot stood astride it to shout directions as to how best to get round awkward corners. The building in which it was housed retained the name of "Bigliardo" when converted into government offices and parliament house many years later.

Maddened the Cabbies.

There lived one time in England a woman who was known as the "cabmen's terror." She was a Mrs. Cuyler, who knew the distance between any two given points in London and always tendered the exact fare without a farthing over. Irate cabbies sometimes disputed the distance or even carried the affair into court, but the "cabmen's terror" always won.—London Tatler.

More Scientific.

"I can't get that woman to take any fresh air," complained the young physician.

"You don't word your advice properly," said the old doctor. "Tell her to perambulate daily in the park, taking copious inhalations of ozone."—Washington Herald.

In the Near Future.

"You take great care not to be run over."

"Got to. I'm afraid I'll forfeit my pedestrian's license."—Louisville Courier-Journal.

Self conquest is the greatest victory.—Plato.

STAGE MANNERISMS.

Grossmith Rebelled Against Imitating Charles Mathews.

Weedon Grossmith in "From Studio to Stage" has something sensible to say about the practice of imitating the methods and mannerisms of great actors, a practice that was once more frequent than it is now. On his return to London he played a part that had been played many years before by Charles Mathews and who had thus established a sort of orthodoxy in its presentation. Mr. Grossmith relates:

"I was asked by the producer to do the same business that Charles Mathews did, and when making my exit at the end of the first act the stage manager said, 'Now, Mr. Grossmith, throw the tails of your frock coat over the back of your head.'

"'Why?' I asked.

"'Because Mathews did it,' he replied.

"'Never,' said I. 'Not having had the good fortune to see the great Charles Mathews, I naturally can't imitate his methods, and I must do things my own way.'

"'Really,' said the producer and, looking at the other members of the company for applause and encouragement, in his best cynical vein added, 'We have many of us heard through press notices what a brilliant actor Mr. Weedon Grossmith is in America, but is he going to improve on Charles Mathews in London?'

"'That's not quite the point,' I replied. 'How Charles Mathews did this business I don't know. At any rate, he was a gentleman in every part he played, and I am much afraid his imitators have vulgarized his business, for it doesn't seem to me possible that Charles Mathews would make an exit from a drawing room in the presence of ladies throwing his coattails entirely over his head, and, whether he did or not, I absolutely decline to do it!'"

BEATS OF THE HEART.

Sounds That Tell Just How That Wonderful Organ Is Working.

Do you know what a doctor hears when he sounds your chest and listens to your heart beating?

Your heart, if it is quite sound, makes a noise very like "lub-dup, lub-dup, lub-dup," all the time. The two syllables come very quickly together, and between each "lub-dup" there comes a pause, the short period when the heart is resting, as it were.

The "lub" sound is due to the blood flowing out of the heart, and the "dup" is the closing of the heart's valves. Just by the loudness of these two syllables the doctor knows if your heart is working as it should do.

Supposing the "dup" is very loud, for instance, that tells him that the valves are being "slammed to," just as a door is, and that the pressure is greater than it should be. The cause of this is generally what is known as an "aneurism."

If the valves are not closing properly the doctor hears a sound very like "duff" instead of "dup." The heart is then said to have a "murmur," and the physician knows what steps to take to correct it.

When the first sound, "lub," is softened into "luff" it warns the doctor that his patient has something wrong with the mitral valve. The "lub" sound is always very much weaker when one is suffering from fever, and it is this weakness, due to the weakness of the heart muscle, which makes the doctor so anxious at those times.

When the heart says "luff-duff" he tells you to knock off work for a time and have a complete rest, for your heart is in a bad way.—Pearson's Weekly.

Police View of Wagner.

Here is a description of the great composer which was dated May 18, 1849, when a warrant was issued to "arrest Richard Wagner, one of the most prominent adherents of the revolutionary party, and to deliver him up to the royal court of justice. Wagner is thirty-seven or thirty-eight years old, of middle height; has brown hair, wears glasses; open forehead; eyebrows brown; eyes gray blue; nose and mouth well proportioned; chin round. Particulars: In speaking and moving he is hasty."—London Spectator.

Dickering For Talent.

"My wife has adopted a scheme used by these baseball managers."

"How now?"

"She is carrying on negotiations with our neighbor, Mrs. Wombat."

"About what?"

"My wife wants to trade our laundress and a couple of housemaids for Mrs. Wombat's star cook, but Mrs. Wombat wants a bonus."—Pittsburgh Post.

Making a Burglar Useful.

"Lie still there and I won't hurt you. All I want is your money and your jewels and then I'll git."

"All right, old man, and while you're searching for the jewels if you run across my dress studs I wish you'd put them out on the dresser. I haven't been able to find them for a month."—Detroit Free Press.

Giving Himself Away.

Here, ma," requested the boy, hurrying in from school before time, "hang my jacket up behind the stove."

"Is it wet?"

"No, but teacher sent me home to tell you to warm my jacket for me."—Judge.

The Logic of It.

Kelly—If yez foorce me to pay that note now I can't pay it. O'Brine—But if I wait till yez pay it I'll nivir git it.—Puck.

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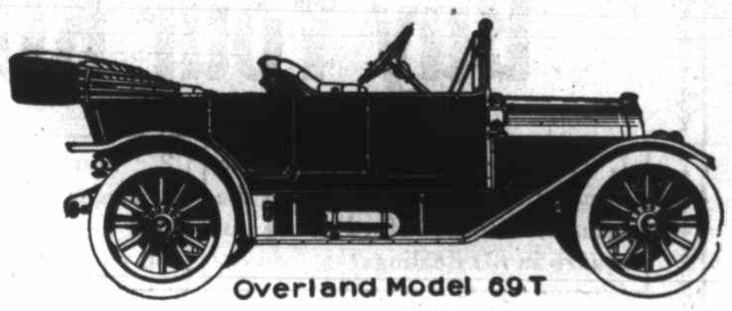
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