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SCIENTIFIC AMERICAN SUPPLEMENT

No. 663.

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TELEPHONE CONVENTION NOTES.

Many men, ingenious and enterprising, with every incentive for study and investigation, are constantly at work perfecting the telephone service, and when they meet to compare a twelvemonth's notes, as they did last week [see another page], the progress made is clearly perceptible. The aim is, of course, to cheapen processes for the projector's benefit as well as to improve them in the interest of the subscriber, and so, though the user may get a deal of comfort in the promises held out last week of improved service, not a word was said to lead to the hope that it will be cheapened to him as much as a penny in the dollar.

It must be said, however, that even a telephone monopoly has its merits as well as its defects. It is to the interest of the parent company to experiment, to keep a sharp eye out for improvements in apparatus, making the fruits of the first widely known and securing for its sub-companies the right of using the latter. It was stated at the convention that out of the 600 telephones and 3,000 parts patented here, all that is worth having has been secured and turned over for the use of licensees.

The feature of the meeting was the virtual admission of ignorance, on the part of the parent company, of a recent and apparently highly important discovery in telephony made by one of its sub-companies, as if the telephone octopus was not sufficiently sensitive to feel what is going on at its extremities. On the second day of the meeting, an employe of the parent company, and supposably speaking with authority, declared substantially that, though the telephone has been in operation these eleven years, the bugbear "induction" has not lessened the potency of its grip a jot or tittle. And in the face of that statement, one of the best known among the brotherhood of electricians rose in his seat and declared that nearly all the telephone troubles popularly supposed to arise from induction are the result of leakage only, induction operating at minute distances, while leakage occurs across wide intervals. Then he proceeded with argument and demonstration, the first founded on an assumed theory, but the latter based on practical experiment, the account of which was listened to with close attention. Neither did the discussion following serve to point a fallacy in the argument nor discredit the means used.

To Mr. C. E. McCluer, of Richmond, Va., this discovery, if it really is a discovery, is due. There they have an electrical railway on the overhead wire system, besides an extensive arc lighting system, trying conditions, it is obvious, in which to operate a telephone service. No sooner did he get rid of the lighting current interference when the railway appeared, not, of course, having the same E. M. F. as the lighting current, but what it lacked in electromotive force it made up in current strength. Yet, acting on his theory that the interference was due to leakage rather than to that induction to which it is usually ascribed, he succeeded in absolutely silencing it. He constructed an artificial "earth" by means of a large copper conductor, and his answer concerning the effect of this on one of the worst portions of his line, which, because of the interest excited, he was compelled to pause in his reading to give, is worth reproducing.

Question: "You say you removed the artificial 'earth' wholly from direct influence?"

Answer: "You understand that when this general return wire was used as a general wire, one of the wires on such a tap being connected to this one ground wire, and all seeking earth at the central office instead of at the point where the subscribers' station was located, it reduced the interference from street railway and electric light currents at least 50 per cent; so that when it was only with difficulty that you could make a man understand what you said, with this general return wire we could hear very well indeed."

Question: "That general ground wire was grounded in the central office?"

Answer: "Grounded in the central office, but when made wholly detached from and wholly in place of the earth, they reduced the other 50 per cent or eliminated it entirely. On these stations I spoke of before, the leakage from the electric light wires had been so strong that the subscriber could not use his telephone at night and the operator could not hear him with distinctness when he ordered a connection. Therefore, he told me he never thought of using his telephone after the electric light had been started. As soon as I had this tap connected to one of these artificial ground connections, I sent one of my inspectors to make some experiments. He called me over this general ground wire. The operator heard his order to connect with 180, which is the chief operator's telephone in the central office. I went to the telephone and talked with him without any difficulty at all. Then I removed this plug from the switch and converted that ground wire with all its attached wires into a metallic circuit, and he and I then carried on a conversation in a whisper, of course getting close to the transmitters, as you have to do under these circumstances. But I have just mentioned that to show you the difference between the general ground wire and the metallic surface. Then, when I made him take out the general ground wire and replace the old natural wire, the din from the electric light was so great that he could not hear a word. I then called the subscriber to the telephone, and the very moment I spoke to him he said 'Hello! What have you done here?' I told him I had been experimenting to see if I could not relieve him of the trouble he had been complaining of. He said: 'You have done it.' I then took the plug out of the central office, disconnected the earth entirely, and talked to him over the metallic circuit. He then expressed still greater wonder that the electric light noises were gone entirely; he could not hear a sound of it. I then made some remark in a whisper, which he heard without difficulty, and replied to me in the same way."

In the underground wire discussion it was stated as a self-evident truth that buried wires cannot be expected, because of the conditions of operation, to give as good service as those strung on poles; the air being the best and the ground the worst description of insulation. The transmitter and the battery, too, are prolific sources of trouble. The many contacts in the magnets, bells, and other mechanisms require especial care, and it was suggested that platinum should be more generally used. Wires connecting insulators outside of buildings with instruments inside are often carelessly set, and defective service is frequently charged, when really the trouble is alongside the subscriber; the window connections of his wire being unprotected from moisture. As to underground service, there is little doubt that, as it increases in dimensions, it will bring new difficulties and require more careful and frequent inspection. Because of the certainty of this there was a general feeling evident about the convention that it would be necessary in the future to construct metallic circuits to insure anything like the service that was had with the pole system.

THE LOCOMOTIVE WATER SCOOP.

J. W. B. asks: Is the device for scooping up water for a locomotive, while going at a high rate of speed, an American or English invention? Answer: It is an American invention, patented by Angus W. McDonald, of New Creek Depot, County of Hampshire, Va., November 28, 1854, No. 11,998.

Philip Henry Gosse.

A telegram from London announces the death of Philip H. Gosse, the distinguished English naturalist.

Mr. Gosse was born at Worcester, April 6, 1810, and early developed a taste for natural history. In 1827 he went to Newfoundland, where he remained in mercantile employment eight years, devoting his leisure to collecting insects and making colored drawings from them. In 1835 he settled in Lower Canada, where he resided four years. He traveled subsequently in the United States, and remained nearly a year in Alabama, where he made a large collection of drawings of insects. Returning to England in 1839, he prepared valuable works, entitled "The Canadian Naturalist" (1840), "The Ocean Described," and "Letters from Alabama on Natural History." He resided in Jamaica for eighteen months in 1844-45, and as a result published "The Birds of Jamaica" (1847), followed by an "Atlas of Illustrations" and a volume entitled "A Naturalist's Sojourn in Jamaica" (1851). For several subsequent years he was employed in composing popular books on zoology and allied subjects. He was one of the first persons to give an impulse to the formation of those public and private collections of living marine animals which became popular under the name of *aquaria*, a term probably of his invention. He published two elaborate memoirs on the natual history of the class *Rotifera*, in the "Philosophical Transactions of the Royal Society," and was elected a fellow of that learned body in 1856. He also published "The Natural History of Birds, Mammals, Reptiles, and Fishes" (4 vols., 1848-51); "British Ornithology" (1849, new edition 1853), "A Text Book of Zoology for Schools," and many other books on kindred topics. His greatest undertaking was "Actinologia Britannica: A History of the British Sea Anemones and Corals" (1858-60). His son, Edmund H. Gosse, is an eminent naturalist and Scandinavian scholar.

Continuance of the Yellow Fever.

Contrary to the expectations that were formed, the yellow fever continues its ravages in Florida. The number of new and of fatal cases in Jacksonville shows no diminution, but on the contrary a tendency to increase is discernible. The epidemic seems so firmly established that the outlook for many weeks to come is far from a bright one. The arrival of frost will stop the infection, but if winter has to be waited for, the intervening period will be a severe ordeal for the afflicted regions. A rigorous quarantine is now in force throughout Florida and the adjacent regions, and its effects upon business have been naturally very disastrous.