

# Telephone "Trouble Shooters" and Their Work on Talking Wires



MAIN BOARD MAN WORK.

**N**UMBER 12, please.

And the telephone subscriber whose line runs into the Douglas street station of the Nebraska Telephone company is in personal communication with the most patient man in Omaha.

The patience of Job is proverbial, and the book which was written about him prophesies the day of communication by electricity, but it is an open question if Job would have occupied his present high position as an exemplar of patience had the telephone been an accomplished fact in his day and the oil prophet been able to attribute his numerous boils to a specific germ.

The most patient man in Omaha—there is three of him—dividing the twenty-four hours of the day equally at the "trouble" station in the basement of the Douglas street station, asks what is wanted in a tone of voice which indicates that he is at the entire service of the inquirer and gives no audible evidence of the fact that he has made that same inquiry to a hundred or more people in a few hours, and is ready to do the same on an average at least twice in ten minutes for the remainder of the day.

The answer to the inquiry is always the same, but couched in various terms, and the patient man is told that something is wrong with the telephone. He doesn't need to be told this, for as soon as the telephone rings a little red light gleams on the board in front of him and he has begun to test the wire which runs between the station and the complaining subscriber.

## Tests for Trouble.

The wire test is made with a peculiar device which seems to be automatic, but which for best results requires a large addition of the "human equation." Under the board on which the light of a bad wire gleams is a row of holes and a number of brass "plugs" looking like brass coated Krag-Jorgensen cartridges attached to cloth covered wires, are at hand for insertion into the holes. When one of the plugs is placed in one of the holes an indicator on a test gauge may begin to move. When it has moved a certain distance it stops and the patient man knows that there is a "grounded wire" to deal with. The test does not show just where the wire is grounded, but by observing the distance the indicator moves the strength of the resistance is estimated, and an experienced operator can tell within a few yards of the place where the trouble may be expected.

Perhaps the first indicator does not move at all. Then another plug is put in another hole and the indicator may show that a wire has been broken, or in a third hole, and it may show that the wires are "crossed" or have come into contact. By observation of the resistance offered it is also possible to determine somewhat closely the location of this trouble, but this observation is not the only method of finding the probable location of the trouble. By a novel device, an explanation of which is still floating vaguely around in the mind of a number of people who listened to a lecture on the subject, it is possible to isolate parts of the wire under inspection that part portion in the basement can be tested separately. If that is found to be all right another device is called into use and a part of the wire between the basement and the first story of the building is tried. This being found to be in operation, a third device tests the line to the "multiple." In ordinary parlance the "multiple" is the switchboard, but what is the use of study if one cannot use technical terms. When the test shows that there is nothing wrong inside the building the real work of the line repairer begins.

## Trouble Shooter at Work.

The man who goes out of the building to make repairs on telephone lines is naturally known as a line repairer by those with whom he comes into occasional contact. Those who like to be on familiar terms with unfamiliar subjects refer to him in a knowing way as the "trouble man," but the real adept in telephone work has no use for such inexpressive terms, and the man who chases the telephone wire from its first contact with the wall to the place where it goes from the gain of routine is known as the "trouble shooter."

But before the "trouble shooter" gets control of the situation other men have an opportunity to correct the waywardness of the wire, for it may have formed a habit before leaving the atmosphere of the house. A crew of men are ever at the side of the patient man ready to administer and correct the small wire at his slightest behest. Maybe the wire has fallen to properly connect with some small attachment which looks like nothing more than a pin which has passed between a railroad track and a locomotive and had a close

bitten from a place just under the head. The "main frame man" looks to its betterment and a drop of solder properly applied mends the attachment of the wire for its associate. Perhaps the "main frame man" cannot reach the place of trouble, as he is confined in his workings to the basement of the building. The card with the markings showing the delinquency of the wire, together with the time it was reported, is then passed to the "intermediate room man." The corrector of bad wire has his station on the first floor of the building, where all wires go on their way from the basement to the switchboard. His day and night in his department and take such measures as will correct it, but the "trouble shooter" appears on the scene when neither of these men nor one of the twenty odd men stationed in the switchboard room can reach the trouble. There is a large crew of "trouble shooters" as the city is divided between them. It is their duty to inspect all wires at all times, and more work is done at night, when some telephones are at rest, than during the day, when all are vigilant. As a rule, it comes upon the scene he carries a ladder, a pair of climbers, a pair of pliers, a coil of wire and a few other tools which do not look heavy, but are a serious handicap to rapid transit when the mercury is flitting with the century mark on the thermometer. Equipped with material to correct or to destroy the "trouble shooter" receives a card which shows the number of the telephone involved in the trouble, its location, time of previous repair, time when the present condition was reported and a blank for the name of the

repairer and time at which service was rendered.

Armed with this data and his tools, the "trouble shooter" hastens from the building to the point at which the cables rise from their underground conduit to the poles. Here he attaches a lead instrument to the wire to ascertain its condition between the box and the central office. The wire being all right in this district, he

then goes to the point where the wire leaves the main poles to start to the house of the subscriber. Another test is made and if the wire is found to be all right there the "trouble shooter" goes to the point where the wire enters the house, where a third test is made. If no fault is found in the wire, inspection is made of the local battery and the receiving and transmitting instrument. This completes the

test and at some point between the central office and the house of the subscriber the trouble is located.

The treatment of the trouble depends to a great extent upon the location. If a wire is found at fault on one of the overhead wires there is comparatively little trouble to change it or splice it, or do whatever is necessary, but it is a different matter if a break is found in the conduit, per-

haps a hundred or more feet from the nearest opening.

**Preventive is Effective.**

The telephone company operates on the theory that an ounce of prevention is worth a pound of cure, but wire troubles can neither be prevented nor cured in every case so some device must be adopted to circumvent the trouble. This is done in great measure by providing wires which are not used until some other wire fails. In every cable there are a number of wires known as "idle wires." No one but the keeper of records knows which are idle and which are busy, and the record keeper doesn't know until after an investigation is made on each request for a substitute wire. This doesn't imply that the record keeper isn't fully competent to attend to business, for it would be a peculiar mind to be on speaking acquaintance with each of the 26,850 wires which enter and leave one station, to say nothing of being able to tell their physical condition at any hour of the day. Of the 26,850 wires which enter the building perhaps more than half are idle now. It was not so once, but new stations relieve old wires and there are "wires enough to go 'round' now.

**Switching the Wires.**

But to return to the "trouble shooter," who has found a break in a wire in a conduit. He reports the fact to the head of the repair department, who calls upon the record keeper to give a substitute for the wire which is out of use. The record keeper goes to a book which is full of

such interesting remarks as "Z-C 1, 2, 3, 4," etc., up to 100 or 200. From this is selected two wires which may be known as "Z-C 1 and 2," 1 being the "out" wire and 2 the "in" wire, both forming the circuit. A mark is made to show that these wires are taken from the passive to the active list and the man at the end of the broken wire is told what wires he can use to relieve the trouble. Connection is made between the wires further from the central station and the new wires and a test is then made to learn if all is right. Other trouble from the main poles to the subscriber's telephone, a wire may be cut out in a manner similar to that for a conduit or a new wire may be substituted.

**What Lightning Does.**

If the trouble is found to be in the instrument a new one is substituted and the old one taken to the shop for repairs. The real work of the "trouble shooter" comes after a storm. Lightning has a way of striking telephones wires and leaving the covers looking as though they had come into forcible contact with the points of innumerable pins, while the small copper wires are melted and burned in a surprising manner. Such a condition recently existed on a number of the cables at Twenty-fourth and Lake streets. Every available "trouble shooter" was put to work and the way those cables were changed was a matter of pleasure to the man in charge of the work whose whole duty is to "keep the lines running regardless of everything." Overhead cables are carried on "messenger wires" and when the "trouble shooter" faces a condition like that which follows lightning's visit he utilizes the "messenger wires" as a sort of improvised tramway. He has a car or platform which will carry two men and their tools. Seated on this car which is attached to a roller resting on the messenger wire the "trouble shooter" draws himself along the wires from pole to pole making such repairs as are required, sometimes cutting out entire lengths of cables, often changing service wires from those damaged to those not affected. To keep such a force of "trouble shooters" where they can be on hand at an instant's notice is no easy work, but this is accomplished by using the men in various capacities. During the times when slight repairs are necessary the greater part of the force may be occupied by the repair men in the shop, but all are ready at any time to respond to the call of the man in charge of the repair force.

**Out-of-Town Service.**

In addition to the men employed to "shoot" trouble in the city a smaller force, but with heavier equipment, is always ready for similar work on the toll lines. A system of tests similar to those in use on the city lines is used on the lines which operate between the various towns within which the Omaha system is connected. The man in charge of this "trouble office" must be expert enough to be able to tell within a few miles of the exact location of trouble on any one of the hundreds of miles of wire which come under the observation of his testing apparatus, as time is an important item in repairs and the repair crew must be sent to the nearest point of trouble at the first opportunity.

The Omaha district of the Nebraska Telephone company is 150 miles long and twenty-five miles wide. Here is a network of wires covering more or less territory, 2,500 square miles of territory. At any moment trouble may begin on any part of the line. Then a horse has to be secured and men have to be sent out to find and remedy the trouble.

Hitherto this has been done with rig drawn by horse power, but H. P. Ryner, manager of the district, is about to substitute a new power. He has designed a motorcycle which will carry two men and which can attain a speed of forty-five miles an hour. This machine is shown in the illustration with Mr. Ryner and one of his men in the seats.

"So far as I know these machines are not used for a similar purpose at present anywhere else in the world," said Mr. Ryner. "I believe, however, that they are going to be a complete success and they will revolutionize the hard work of the man who has to see to keeping thousands of miles of more or less frantically secured wires in good working order. For example, if we get word that something is wrong with a wire on the West Dodge road, say fifteen miles away. Under the old system we had to arrange to secure a lively rig and by the time this was ready an hour had been lost. Then in getting to the scene of the trouble a horse could not go more than seven or eight miles an hour. "Under the system we are about to try the men will mount the motorcycle. The minute word comes of trouble, they will turn on the power and away they will go at forty miles an hour and have the wire in working order again before a lively rig could be hitched up and made ready."

**Correcting the Record.**

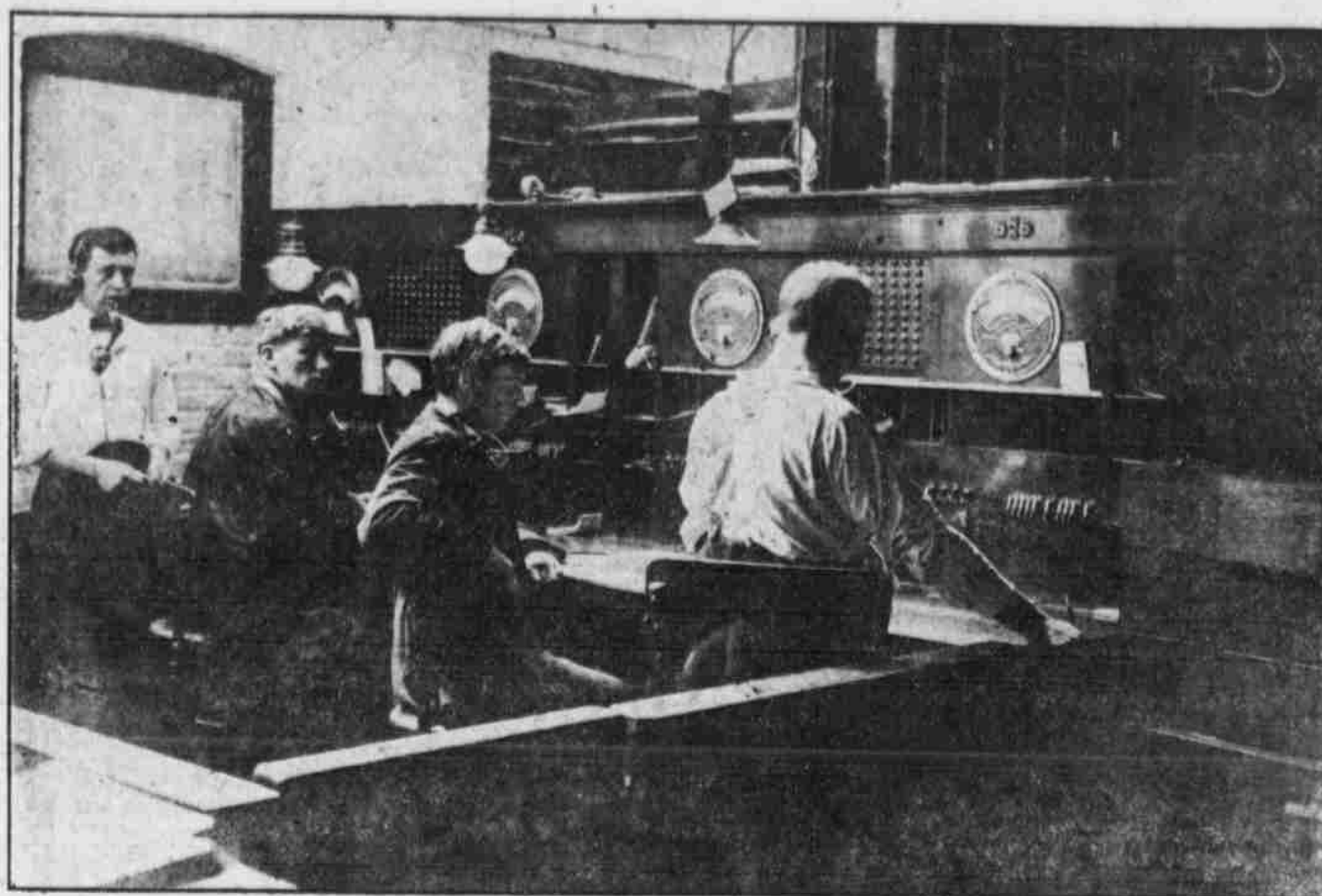
Representative Champ Clark of Missouri, tells a story about former Representative Henry U. Johnson of Indiana.

"Mr. Johnson," he said, "was engaged in a debate with an Illinois congressman and called him an ass. This was unparliamentary, of course, and had to be withdrawn. Pursuant to the order of the speaker Mr. Johnson said:

"I withdraw the language I used, Mr. Speaker, but I insist that the gentleman from Illinois is out of order."

"How am I out of order?" demanded the Illinois man, with considerable heat.

"Probably a veterinary surgeon can tell you," retorted Johnson. "This was parliamentary and went to the Record."—Indianaapolis News.



WHERE THE FIRST TESTS ARE MADE.



NEW DEVICE FOR TRANSPORTING TROUBLE SHOOTERS.



WHERE THE CABLES LEAVE THE GROUND AND TAKE TO THE AIR.

## Bright Gleanings From the Story Teller's Pack

**A Witness.**

THE lawyer for the defendant was trying to cross-examine a Swede who had been subpoenaed by the other side as a witness in an accident case.

Now, Anderson, what do you do?" asked the lawyer.

"Sank you, aw am not vasa well."

"I didn't ask you how is your health, but what do you do?"

"O, yas, aw work."

"We know that, but what kind of work do you do?"

"Puddy hard work; it ees puddy hard work."

"Yes, but do you drive a team, or do you work on a railroad, or do you handle a machine, or do you work in a factory?"

"O, yas, aw work in factory."

"Very good. What kind of a factory?"

"It ees a very big factory."

"Your honor," said the lawyer, addressing the court, "if this keeps on I think we have to have an interpreter."

Then he turned to the witness:

"Look here, Anderson, what do you do in that factory—what do you make?" he asked.

"O, yas; I un'erstan; you want to know vat I make in factory, ah?"

"Exactly. Now tell us what you make."

"Von dollar an' a half a day."

And the interpreter was called in to earn his salt.—Philadelphia Ledger.

**A Pastoral.**

It was a beautiful night. The gentle zephyrs of the evening played musically amid the silky leaves of the tulip trees and the onion bushes and wafted from across the distant fields the delicate fragrance of the growing cabbage and the far off odor of the bean trees.

"Betsy," he cooed, as they sat on the rickety wooden fence surrounding Mrs. Milligan's pigsty. "Ow bee-a-utiful is luv! Jes' think ov it, Betsy. Wen we are married we'll have a pig all on our own, all to ourselves."

"Willum," she whispered, resentfully, "why should we want to buy a pig? I shan't want ter buy a pig when I've got yew!"

Then all was silent once more, except that the gentle zephyrs still played amid the friends of the cabbage bushes and the silver throated frog still sang from the roof—Reynolds's Newspaper.

**Flattering a Judge.**

The late Senator Morgan used to enjoy telling of an amusing incident in court as illustrating the methods of other days to influence a country justice by flattery.

The incident occurred in a southern town many years ago. The court was presided over by a rural magistrate, to whom counsel for the defense at once directed his remarks.

"I realize," the attorney began, "that I stand in the presence of a descendant of the great old Huguenot family that emigrated from France to escape religious intolerance.

Many able jurists have sprung from that family and embellished the bench and bar of the union. Their watchwords are 'honor, truth and justice,' and their names are spoken in every home. The law is so plain in this case that he who runs may read. Shall I insult the intelligence of this court by reiterating a proposition so simple and elementary? Need I say more?"

"No," interrupted the judge. "I ain't necessary—I'll give you a judgment."

Counsel sat down, while the judge with emphasis knocked the ashes from his corn-cob pipe, and counsel for the plaintiff began:

"May it please the court—"

"Squire, what are you fixing to do?" asked the honorable court.

"I have the closing argument," was the reply.

"Well, you might jest as well set down," observed his honor blandly. "I've made up my mind for the other side. Judgment for the defendant."—Philadelphia Ledger.

**Sociologist Strikes a Poser.**

Colonel Frank Pierce Morgan, the well-known sociologist and raconteur of Washington, at one time was of the opinion that if the children of "poor white trash" in the south could be put to work much good would result to all concerned. An experience he had on an ineffectual tour recently rather puzzles him. In Stateboro, N. C., he fell into conversation with a well-fed looking citizen, who sat on a dry goods

box whittling a stick.

"What do you do for a living?" asked Colonel Morgan.

"Wall, stranger," accommodatingly replied the hospitable tarheel, "I don't have to do nothin' for a livin' these days, seein' as how I have five head of gals a-workin' in the cotton factory."—Washington Times.

**Conscientious Mens.**

There is a German dairyman and farmer, whose place is not far from Philadelphia, who greatly plumes himself upon the absolute superiority of his products above all others in the vicinity.

On one occasion he personally applied to a Germantown housekeeper for a transfer of her custom himself. "I hears dot you

haf a lot of drouble with dot dairyman of yours," he said. "Tust you gif me your gustom and dere vill be no drouble!"

"Are your eggs always fresh?" asked the woman.

"Fresh!" repeated the German, in an indignant tone. "Let me tell you, madam, dot my hens nefer, nefer lay anything but fresh eggs!"—Harper's Weekly.

**A Big Party.**

Peter F. Dailey is a man of imposing personal dimensions, a fact he once made use of to the disgust of a railroad conductor.

Delayed at a small station, where the through train for New York would not stop for the next twenty-four hours, he wired the superintendent at the station below:

"Will you stop at Lonelyville for large party at 6 p. m.?"

The answer came: "Yes, will stop train."

When the express pulled in Mr. Dailey started to board a car.

"Where is the large party we stopped for?" inquired the conductor.

"I am the large party," said Mr. Dailey with dignity.—Young's Magazine.

**They Were Really Agreed.**

Timothy Woodruff tells of the efforts on the part of a kindly disposed man in Albany to arbitrate between a man and his wife, who were airing their troubles on the sidewalk one Saturday evening.

"Look here, my man," exclaimed the Albany man, at once intervening in the altercation, "this won't do, you know!"

"What business is it of yours?" demanded the male combatant angrily.

"It's my business only so far as I may be of service in settling this dispute," answered the other mildly, "and I should like very much to do that."

"This ain't no dispute," sulkily returned the man.

"No dispute?" came in astonished tones from the would-be peacemaker. "Why, you—"

"I tell you that it ain't a dispute," insisted the man. "She thinks she ain't goin' to get my week's wages, and I know she ain't! That ain't no dispute!"—Lippincott's.

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**Narrow Escape of a Spanish Balloonist**



Captain Kindelan of the Spanish Military Engineers, making an ascent from Valencia in the military balloon Maria Teresa, was blown out over the Mediterranean and the balloon, beginning to fall, he was in imminent danger of drowning, when the British ship West Point came along and saved him. As he was trying to hook his trailing rope in the rigging of the ship the curious snapshot reproduced here was made on board another vessel on the spot.