CONNECTIONS *news*

A Message from Our Director

It's hard to believe it's almost winter and the pandemic lives on. Still we are open here at the THG Archives and our volunteers have been helping us in many ways. Harold is building a database for the *Mountain States Monitor*. Ron has been doing various research projects and helping with displays. Jack and Jon are finishing up their video database. Yea! Jody has been working on many things like applying for a grant to help with our supplies and putting together this wonderful newsletter. Seattle volunteers have been accomplishing a lot of curating and equipment setup. We all keep on keeping on.

Speaking of early Monitors, Harold sent me a story in the January 1919 Monitor about Provo District Utah by W. Raymond Green, Correspondent:

"Notice to visitors: When you come to Provo be prepared to stay at least four days. We are under strict quarantine rules now, and everyone coming into the city is to be housed up for four days. If then no influenza is apparent, they are allowed to go about their duties. Also, don't forget your masks. Yes, sir; fine, if you don't wear them. The police are watching everyone in this district.

They are also watching all incoming trains, as Leon Y. Billings, District Cashier; Jack Teasdale, Wire chief and E. A. Grames, chauffeur, found out to their sorrow. They were returning from a week's duck hunting thinking they could slip one over on the police and that possibly they were exempt from the above rulings, quietly slipped off the train, only to be nabbed by said officers and escorted to a waiting automobile and then taken to their homes, there to remain for four days. All District Manager Lewis' pleading for the boys' release were to no avail. All agreed that they didn't mind being housed up for the four days, but that they thought it was an imposition to be charged fifty cents each for the automobile ride, which they claimed should have been free."

I want to wish you all a very happy, healthy holiday season and a fantastic 2021.

Renee Lang, Acting Executive Director

Originally published in The Northwestern Bell, Vol. I, December 1920, No. 12, *and sent to us by THG member Cindy Hadsell*

Casper E. Yost Dies
Friend of Telephone Employees, Leading Figure in Development of Industry;
for Quarter of Century President of Our Company

Casper E. Yost, chairman of the board of directors of our Companies, and for years the president, died November 22, at Long Beach, Cal., where he had gone just a few days before in an endeavor to regain his health. Funeral services were held November 27, at Mr. Yost's home in Omaha with the interment in Forest Lawn cemetery. The pallbearers were men who had been friends and associates of Mr. Yost.

Mr. Yost had been in declining health for several months, his condition becoming serious at one time early last summer. He rallied, however, and during the last few weeks he returned to his office quite often. The news of his death came as a shock to Omaha, which knew him as one of its leading citizens for more than fifty years, and to many people in other cities throughout the middle west. Officials of the American Telephone and Telegraph Company and of the associated companies, who knew him as a pioneer telephone man, a close personal friend of the late Theodore N. Vail, and as an outstanding figure among the telephone officials of America, were deeply affected, and messages of condolence began arriving from them immediately after they received the news.

But it was among the telephone employees themselves, particularly among the great

CASPER E. YOST,
PRESIDENT NEBRASKA TELEPHONE CO.,
OMAHA.
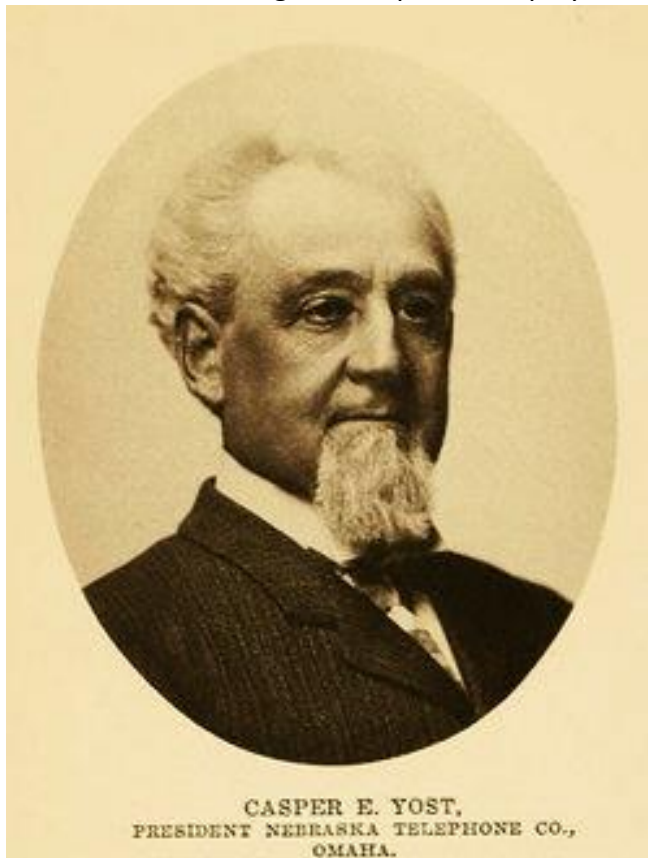
number who were fortunate enough to know Mr. Yost personally, to whom the news of his death caused the greatest sadness. To his associates Mr. Yost known as a plain, lovable man, eager always to advance personal aid to any telephone employee who needed it and noted as one of the most generous supporters of charitable institutions in his home city.

He was economical in his business administration, insisting upon the most earnest regulation of expenditures. "Economy is the greatest factor in either business or personal success," Mr. Yost often said. He conducted his own affairs in the thriftiest fashion, he urged such conduct among his associates, and he was anxious to impress his message upon telephone employees.

The word "private" was never seen on Mr. Yost's office door. His door was always open, and he was always accessible to all who wanted to see him. These personal

traits, and many others, won for him the most sincere respect and loyal attachment of telephone employees and all others with whom he came in contact.

Mr. Yost was born October 9, 1841, in Waterloo, N.Y. He attended the public schools at Ypsilanti, Mich., and graduated from the law school of Michigan State University in 1863. That year he came to Omaha and in 1865 President Lincoln appointed him United States marshal for Nebraska. He served in that position four years, and in June 1872, was appointed postmaster at Omaha, being reappointed in 1877.

Those were the days when he came to know Theodore N. Vail. Mr. Vail had abandoned telegraphy to enter the railway mail service in Omaha, a position which later led him to Washington and thus to the attention of Alexander Graham Bell and his associates who were promoting the baby telephone industry. The friendship that grew up between Mr. Yost and Mr. Vail at that time developed as the years passed, until their attachment for each other was remarked by all who knew them.

Mr. Yost bought an interest in the *Omaha Republican*, a newspaper, in 1875 and for eleven years was its business manager. He was chairman of the Republican state committee in Nebraska in 1875. He served as president of the Omaha Chamber of Commerce and for a time was counsellor of the National Board of Commerce.

In 1889, recognizing the telephone at its true value and visioning its possibilities in the years to come, he entered the service of the Nebraska Telephone Company. Two years later he was made its president. In 1898 he became president of the Iowa Telephone Company, and on December 1, 1907, was elected president of the Northwestern Telephone Exchange Company. For more than a quarter of a century he led the telephone workers of Nebraska, and for nearly that length of time he served as president of our other two companies, his long service winning for him the honor of being the dean of all telephone presidents.

During that long service Mr. Yost helped the telephone industry to grow; he saw it assume its rightful place in the affairs of the country, and he, with Mr. Vail and others, saw their hopes and visions realized; their dreams of thirty years ago come true. In May 1919, Mr. Yost retired from the presidency of the three companies and became chairman of the board of directors. He kept actively at work every day.

The death of Mr. Vail in April, the companion of his younger days and his associate during the years of their service for the telephone, cast a sadness over Mr. Yost which did not disappear. Together they had helped the telephone to achieve its success, and together, their life's work done, they have passed on, leaving their work in younger hands.

THG is proud to hold the Casper Yost collection, made up of correspondence dating from 1894 to 1898, when he was President of the Nebraska Telephone Company. It provides a fascinating look into the mind of a leader of the early telephone industry.

ME & TELEPHONE CABLES
John Swartley

To continue my "Swartley's War Stories," I came across this Bell System Cable and Wire Color Code in my collection. This brought memories of my telephone cable experiences. In my 1971 CWA Union contract they listed both a cable splicer and cable repairman, I never had that title in my career. Working in small towns like Garden City and Steamboat we learned to be "jacks of all trades and master of none," no matter what title we held. I am titling this war story Me & Telephone Cables., so, bear with me while I reminisce back through my telephone career for a while.

I read an interesting book on my favorite topic, history, titled, *Eyes of The Nation*, produced by curators of the Library of Congress. I found this drawing and an article proclaiming the first under water *telegraph* cable connecting United States to Britain back in 1866 as the eighth wonder of the world. The original seven copper wires in the cable were coated with gutta-percha. Gutta-percha is a latex type material from gutta-percha trees grown in Malay. Although the first attempt lasted only a few days it was a start that would allow the world to be connected.

In my research I have watched many interesting videos, from Cryus Field's first submarine cable to the development of the hundreds of submarine fiber cables that now lay on our oceans' floors, and all the modern technology that keeps them functioning. To keep busy, in time I would like to research an article just on submarine cables and how they are changing the world.

These photos are of the Polk Street cable plant in Chicago taken in late 1880's. The photo on the left shows employees wrapping individual wires with paper or pulp.

1882 Western Electric Plant. The machinery was considered complex for its time.

These machines were operated by women who probably received cheaper wages at the time. On the right, they are wrapping the wires into a cable that was then covered by lead.
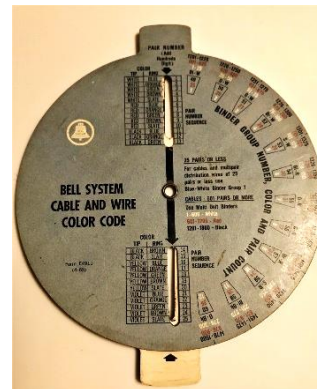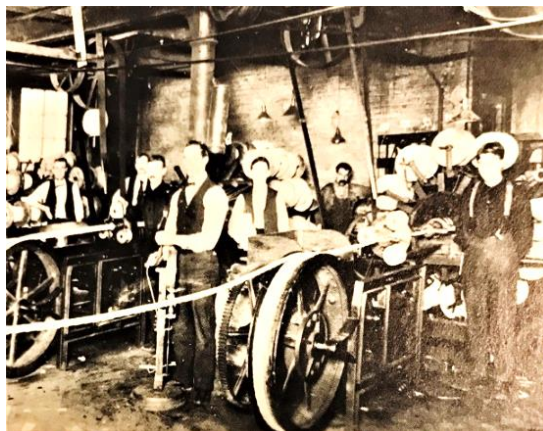
The first transcontinental underground cable was completed at Wendover Nevada, December 21, 1942. Wendover was where the last connection for the first transcontinental telephone circuit was completed in July of 1914. The first transatlantic *telephone* cable was completed Sept 25, 1956.

The ever-expanding demand for telephones created growth problems with open wire, sometimes there would be more than one telephone company in town with each company requiring space for telephone wires. Photo on right is of the St Louis exchange building in 1884 and there were already cables in use. The Colorado Telephone Company started installing cables on poles and underground conduits for cables in Denver in 1888.

The truck hauling these cable reels would have been around 1915 model, noting the chain drive and solid rubber tires. These cable plows were installing underground cable in 1930 between Kansas City and Joplin.

1930. Construction crews bury cable between Kansas City and Joplin.

They mainly buried only toll cable at that time due to the cost of installation. Knowing the rocky terrain in that area, burying cable was no easy task.

The original lead cables were attached to the carrier strand by rings. Theses rings would cause damage to the lead cable at times. The rings were installed by the cable installer riding a cable car buggy.

In 1942 Dory Neale patented his cable lasher that would change the aerial cable installation. His first lasher required the installer to ride in his cable car buggy and crank his way across the cable span.
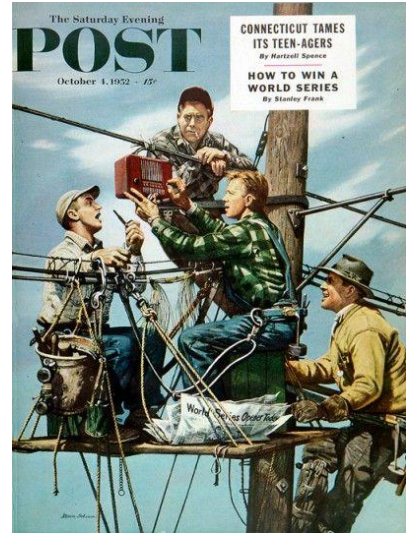
102 years ago (1959), when I joined the line crew the cable lasher was the main stay of our aerial cable installation.

We would have to transfer the lasher at each pole like the lineman made famous in this Norman Rockwell painting was doing. By then all the cable had hard polyethylene covering and was easier to install than lead cable.

In this *Saturday Evening Post* cover by Norman Rockwell you can see how the cable splicers were set up on their cable platform, splicing lead cable that was still supported by rings.

By 1959 all the aerial cable was coated polyethylene. This allowed us linemen to install ready access terminals in the smaller subdivision area cables while we were strapped the pole. Some "bean counter" in the Bell System realized it was cheaper to change out a chewed-up pole once in a while, compared to the cost of adding steps to each pole that had a terminal. It was not long
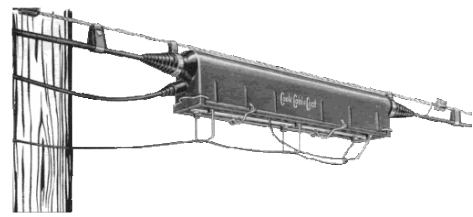
after the use of the ready access terminal that we stopped adding steps to poles.

By 1954 there were reports of one man splicing with the introduction of splicing methods not requiring stripping the insulation. The new splicing methods changed the cable splicing world eliminating many splicing jobs in our industry.

The Telecom History Group has many photos of the telephone cable history in their library.

In my research I found a 40-page report produced by Western Electric in 1955, detailing information about their cables. They explained how they developed wood pulp insulation that allowed them to wrap each individual wire with pulp that created a seamless tube around the wire. This procedure kept the insulation from unwrapping.

My little experience with pulp lead cables was in Garden City where the squirrels like to sharpen their teeth on the bottom of the lead cables. When it finally rained, and the paper or pulp got wet, it shorted together. The shorted faults were easy to find. I learned how to carefully remove the lead sheath and separate the wet pairs with of paper tape. Then I would fill the cable with desiccant and cover the section with a temporary cover; the cable repairman would install a permanent lead splice cover later.

The pulp or paper covered wire was not color coded and each pair had to be toned out. One time while I was on the repair crew in Boulder, someone cut a main pulp lead cable. I spent several days and accumulated a lot of overtime going to each house, connecting a tone to their protector, and waiting until the cable splicer found the pair and talked to me. Most of the customers were not home and big dogs in the back yards created a challenge.

Most of my cable experience was with "pic" cables. Pic cable is multiple sheath cables-- Alpeth, inter aluminum inner shield and Stalpeth, outer polyethylene cover. The first thing I had to learn was "why run backwards, you varmint." It was for the tip colors, white, red, black, yellow, and violet. Ring wires were blue, orange, green, brown and slate that repeated with each tip color group. These color groups repeated no matter how pairs there were in the cable. Unlike key cable the colored wires were solid color and we had to be very careful not to split the pairs. We would tape each group (see photo) to keep them from splitting. In time, all the underground cables had a water proofing jell that was hard to clean and messy to work with. In Steamboat during the ski industry boom, the large cables connecting the town to the ski area were often cut; everyone on the crew, including our Supervisor, turned into cable splicers.

My alley of telephone history (upper left). The most distant manhole cover from the central office is Missouri & Kansas Telephone Company, founded in 1882 and merged into Southwestern Bell in 1917.

There are Bell System, Southwestern Bell, and finally AT&T covers. Someday I want to see if I can find out where the Central Office was in 1917 when this manhole cover was installed.

Although there is so much information on the internet, I still like to reread some of the great telephone history books I have in my collection. These books include *Muttering Machines to Laser Beams* by Herb Hackenburg, and *Good Connections* by David Park for Southwestern Bell. [*both available for sale on the THG web site, or by contacting us at 303-296-1221*.] These books allow me to relive my career and remind me that no matter how important I felt like I was, it took many dedicated employees to keep the Bell System operating and all of their contributions were just as important as mine.

Telephone Plays Big Part in Election Count
"Did We Girls Vote?" Asks Operator. "You Just Bet We Did!"
The Northwestern Bell, December 1920
Sent to us by Cindy Hadsell

Telephone service this year played a more important part than ever in collecting election returns, but the distribution of information was in strange contrast to past years.

Arrangements were made at most all exchanges in the Council Bluffs district for additional operators to take care of an expected increased load. These operators were from the regular force and with their ever-ready willingness they took an assignment for some part of the night to help handle the election returns.

At a very few points special wires and equipment were placed in newspaper offices, city halls or other places where people expected to congregate to hear returns. As we all know, the telephone company had no special arrangements to furnish election bulletins to the public free of charge, so that what returns were received by telephone were handled either over local wires or on a paid toll basis.

The outstanding feature of election night was the contrast between it and former presidential election nights. As many of our people will recall, it used to be the custom to make quite elaborate preparations to furnish election returns to the entire country. This developed until there was even considerable rivalry as to whether the telephone or telegraph wires would deliver the important returns earliest.

"The Old Time Celebration"

It was quite a common practice for the county political organizations to arrange for public places in which to receive these returns and, in order to have them in shape that they could be posted after being read to the crowd, the telephone company would write them on bulletin paper, making as many carbons as possible, copies to be delivered at different points throughout the city.

It was also customary for these organizations to arrange for some kind of a midnight supper for all the people who were assisting in handling these returns, and there were times when the feed approached the quality of a banquet, especially if the news that was being received was such that won the approval of the people who had charge of the affair.

Also, election night usually meant quite an additional load in local calls, while this year there was very little of such traffic, and many of the operators who reported for duty returned home shortly after midnight. While, of course, there was interest in the early part of the evening, people seemed to be satisfied with such early reports as they had and went home with the idea of waiting until the next day to get complete returns; and, while this takes away the excitement and glamour of former years, it probably gets as satisfactory a result as the old system.

"Others Help Tell Story"

Dora Friedrich, chief operator at Fergus Falls, Minn., writes as follows, telling her story of election day. "Most of the women were interested and streamed to the polls. It was our first opportunity and we took advantage of it. All the operators that could went to vote. The operators volunteered to work overtime and do their best. I took one of the day girls to help the night operator and the supervisor to help during the day, but everybody was so interested in voting that they forgot to use the telephone."

The Omaha daily newspapers were more fully equipped this election than ever before, having private lines to the election commissioner's office, for the quick assembling of figures. They used lanterns and screens to give information to the public; theaters put on an extra show during the night and a big department store also held an election returns party for its patrons. All these facilities tended to relieve the demands upon the operators.

How the operators of her city played an important part in a little human interest election day story is told by Mae Griffin, local traffic correspondent at Cedar Rapids, Ia.: "On election day, November 2, a subscriber asked the information operator if she could give her a telephone number for a democratic precinct. The operator had no telephone listed for any precinct. She told the lady, who said: 'Operator, I am 60 years old and this is the first time I ever got a chance to vote. Our house had to be quarantined right on election day and I can't get to the polls, but I thought I might vote over the telephone.' So the information operator gave her the number of the Democratic headquarters. We operators hope she got to cast her first vote."

VOTE

League of Women Voters

Why we "Count Pegs" in 2020

In THG's Connections Museum in Seattle there hangs an old sign which reads "**PEG COUNT TODAY □ Please Be As Accurate As You Can.**" An email from one of our visitors prompted us to research the question "What sort of peg is this sign talking about anyway, and why was it so important to count them?" Or asked a bit more seriously, as our erstwhile museum guest did, what is the origin of the term "peg count" which is still being used in conjunction with the most modern of all-digital telephone systems? The administration manual for the Nokia/Lucent 5ESS system for example tells us that the "Traffic Control Application captures statistics which include busy hour data, peg counts, and call detail records."

THG founder Herb Hackenburg in his book *Muttering Machines to Laser Beams (1986)* says that the phrase began with early operators who would advance a peg (or a cordless plug) into the next jack after each call. But why would they need to do this?

We get a little bit more detail from Angus Hibbard who gives the following history in his book *Hello Goodbye - My Story of Telephone Pioneering (1941)*. Hibbard was born in Milwaukee Wisconsin in 1860 and began a long career in the Bell Telephone Company starting at the age of just 18 in 1878. So it is fair to say that he was there pretty much from the start, and in his book he gives a firsthand account. In chapter 10 Hibbard tells us:

> *In switchboard planning it was found necessary to devise methods for counting the traffic — that is, to find the number of calls handled during the day; make plans for equipment to take care of them; and also make estimates of the increased loads expected in the future. To do this, each operator must count her calls, which must be recorded at least every hour and tabulated so as to show the total traffic to be provided for. Charles Scribner (the chief engineer of the Western Electric Company) suggested that each operator be given a small round peg, select an unused panel of one hundred jacks in the switchboard before her (if she had such equipment) and " peg" one hole for each call as she completed it. This was tried. But at once simpler equipment suggested itself, a small wooden board like a cribbage board with a hundred holes in it; with this and her "peg" the operator more conveniently and accurately "pegged" her calls for the record.*
>
> *This was done whenever required and was called the "peg count." The totals, made up every hour, were plotted and shown on a curve which we soon came to know as the shape of a telephone day.*
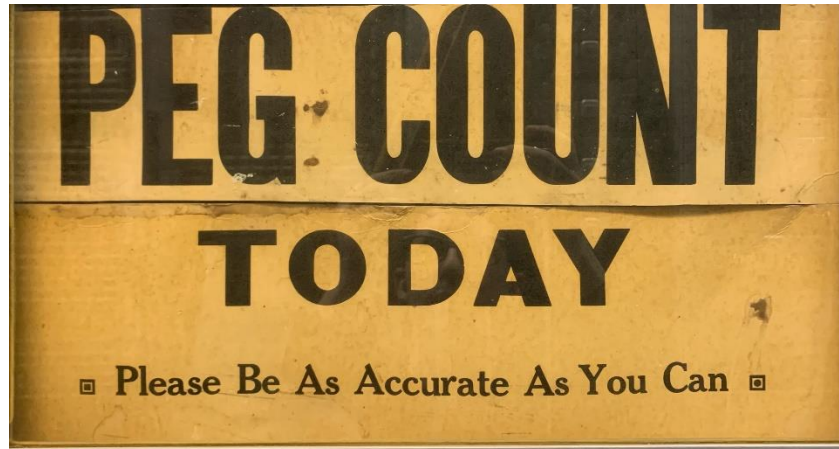
In 1921 an article in the Journal *Telephony* recommended that "This count should be taken in every office on at least two full days each month." So it was not something the operators did every day, but they were asked to do it once or twice per month, and that is no doubt when the chief operator fished out and displayed her **PEG COUNT TODAY** sign (like the one we have in the museum).

Both origin stories for the term make sense, and according to Hibbard both are correct. Some operators used a blank plug or wooden peg in an unused row of jacks on their switchboard as a counting mechanism and some operators used a little wooden board with pegs like a cribbage board. As we see below other methods were used too, though Hibbard does not mention them.

The general name for the concept behind all of this is Traffic Engineering and it has been part of the development and growth of telephony from nearly the beginning. It has always been a goal for every telephone company (not just those in the Bell system) to find the right balance between providing the best possible service and the best priced service. To make good decisions about how much equipment to buy for a central office and how many operators to schedule on each shift it was essential to know how busy the switchboard operators typically were at various times of day, or later of course how close to full capacity the various parts of the automatic switching systems were.

Chapter 5 of the 1983 Bell Labs tome *Engineering and Operations in the Bell System* gives a further explanation of the motive:

Obviously, it is more economical to design the network so that equipment can be shared-different people use the same equipment at different times - rather than dedicated to each of the millions of users. When equipment is shared, though, a particular person may not be able to complete a call because the necessary equipment is busy. Thus, a tradeoff between cost and service exists: The more equipment available for use, the better service the user will receive, but the more costly that service will be.

The term "Peg Count" stuck even after improved ways of keeping track of call traffic were devised. Systems were developed to count the number of calls automatically and the wooden pegs were discarded, even though the job of peg counting remained. In 1947 a U.S. Dept. of Labor Bulletin (No. 207 for the year) explained that:

The peg-count clerks' job is to read the automatic registers, hand counters, and tally sheets and to prepare report sheets, adding and subtracting to obtain summaries of service. These reports are turned over to the traffic engineering units for their traffic studies and planning programs for force and equipment needs.

The exceptionally large expenditures on new equipment that were at stake also hints at the reason for our historic sign's second exhortation to "please be as accurate as you can."

There is a record of an interesting exchange between John J. Carty of the New England Telephone Co. and C. N. Fay, President of the National Telephone Exchange Association, at a meeting of that group on September 10, 1885. The transcript of the meeting is preserved in a volume in the University of Michigan Library.

Carty was just 24 years old at the time of this meeting, but already a rising star within the Bell System's technical ranks. By 1907 Theodore Vail had named him AT&T's Chief Engineer. Here Carty comes to the defense of the New England Telephone Company's operators though clearly some members of the Association had concern about the accuracy of their work. B.E. Sunny, the Superintendent of the Chicago Telephone Co, also weighs in, and tells us that in Chicago they used a tablet on which the operators marked their counts.

Some of the peg count registers from our 1923 Panel switching system

THE President—My object in provoking this discussion was to find out how accurately the number of connections made by an operator was given—how many connections were actually made by an operator in the course of a day. We have never been able in our method of watching and counting to make up such big records as are made by the other exchanges. Either we are mistaken, or they are mistaken, or else the operators in Boston are smarter than those in Chicago. I am not prepared to believe there is so much difference in human nature.

Mr. CARTY—The count in Boston was made by the operators themselves.

THE President— We have always found that a thoroughly untrustworthy method. Operators will make a big record for themselves every time.

Mr. Carty—We have felt justified in making a large expenditure based upon just such figures, and the results we have obtained satisfy us. We have done it in the new office. We have not any reason to doubt that our operators have proved any more unreliable in the new office than in the old.

Mr. SUNNY—The count was made up with us under the immediate supervision of the chief operator. Most of the business is trunk line business. The operator at the office where the call originated pats down a mark on her tablet for a call that she sends on a trunk line. The operator at the distant office puts down a mark on her tablet for that call as she received it. In some instances those tablets were taken up every thirty minutes, and in other instances taken up every hour and a half. The operators had no idea when those tablets would be taken up; so they could not compare notes with each other and agree upon a certain number of connections. Now as a check, to show the accuracy of the records kept by the operators, at the end of the day's work the calls sent and the calls received ought to balance one another;

and they did balance one another within fifty. I think that as far as our records were concerned they were almost absolutely correct.

An advertisement from the February 1908 issue of the American Telephone Journal, touts the Veeder company's mechanical counter as the solution to this problem. (Veeder had invented this counter in 1895 and sold it for many other purposes as well.)

Finally, with the advent of computerized systems the error prone process of manual "peg counting" became entirely automated. Operators were no longer required to move wooden pegs or use hand counters. The job of peg-count clerk was eliminated as well. Even so the term still survives as part of the software in today's telephone network.

So now we finally have a better idea about why counting the pegs is important, and why the process of measuring the volume of call traffic in a telephone system continues to be called "Peg Counting." And we have more good story about telecommunications history to tell our museum guests when they notice that sign.

HAPPY HOLIDAYS!

TELECOMMUNICATIONS
HISTORY GROUP