Dial Log

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Director's Report

By Jody Georgeson

The big news this spring is all about our upcoming exhibit at the Denver Public Library. Volunteers, staff and board members have been working hard to make it one of the most educational exhibits ever. It will run from May 6 through the end of July, and will feature the history of telecommunications in Colorado. It will include many unique documents and artifacts from our collection, interactive displays and thought provoking vignettes. I hope those of you in the area can visit the display. It will be at the main Denver library, 13th and Broadway, on the 5th floor. Come on down!

We'll also be participating in Doors Open Denver on April 16 and 17. If you haven't made time to tour the historic Mountain States headquarters building at 14th and Curtis, this is your chance. Many other buildings in town will also be opening their doors for this annual event. See page 5 for more information.

During the recent unrest in the Middle East, hundreds of people in Egypt documented demonstrations with their cell phone cameras. When mobile phone and Internet access was shut down in January, people used land lines to let the world know what was going on in their country.

The 8.9 magnitude earthquake and tsunami in Japan cost the lives of thousands of people and disrupted communications in the Asian country. People are lining up at public phones. Cell phones still work, but the service gets jammed quickly. Data works much better than voice on mobile networks. The three largest mobile phone networks said that their services were disrupted across Japan. Reception on wireless systems was poor or bad.

The Prime Minister's Office has launched an English Twitter account to update the world about the situation in Japan. With the deadly tsunami and earthquake knocking out traditional phone service in Japan, the world turned to the Internet and social media for communications. We are once again reminded of the importance of communications during man-made or natural emergencies.

Colorado-Nebraska Football TV
by John Swartley

John, a long-time THG member in Springfield, Missouri, has begun writing reminiscences from his time working at the telephone company. Here's one of them…

While I was working for Mountain Bell in Boulder, Colorado (somewhere around 1968) I helped with the first ever televised football game between CU and Nebraska.

We started on the Monday preceding the Saturday game. It took us all week to install the wiring that was required. It was a big project because there was no conduit or previous wiring. We had to strap it to the seats so people would not trip on the wiring. The installation required a wire called "order wire" to be installed to all the camera locations, including a 100-foot crane sitting on the end zone that had a platform attached so the camera man could take aerial shots.

They had placed three temporary trailer houses behind the field house. This is where they had all their equipment. One part of the trailer had three men sitting with some kind of projector that showed statistics on a blue background. They would somehow superimpose these stats on the live broadcast.

We installed a temporary microwave dish that pointed to the main microwave tower on the mountain behind the college. The bill from Mountain Bell had to have been huge. I believe there were six of us working many hours of overtime to complete the project.

On Friday, the day before the game, all the ABC officials showed up with their blue jackets on. They were everywhere! On Saturday, ABC catered a large buffet. We didn't have much to do on game day except be there if something went wrong, and eat all the great food they furnished. I spent most of the day down on the field where I really could not see the game very well. I did get to see the cheerleaders up close.

After the game there was a helicopter standing by to take the producer to the Denver airport. He had another game to produce somewhere else. It is interesting to watch the producer work –there are several cameras operating all the time, and he decides what appears on your TV screen.

I helped televise the games for the next two years. The second year they had two semi-trailers instead of the house trailers. Then they condensed it down to one semi over the years. I have connected several phone lines to the television trucks, and was allowed to watch their operation. It was exciting!

When the Telephone Was Young

from the *Chicago Tribune*
November 16.1887

People who have studied the telephone know that this interesting invention does its duty excellently in the country where it is not subject to the disturbing influences of currents upon other wires. As yet, however, only a poor success has been achieved with it in the cities, where the currents on the large number of wires have interfered with the telephone current. To devise a remedy for this serious difficulty, the Western Electric Manufacturing Company in this city have just begun a series of experiments with the assistance of Dr. Hill and Mr. Scribner, electricians of the company. The first tests were made on Saturday morning at the company's works on Kinzie Street.

The experiments, while in progress, led to the remarkable discovery that the magnet of the Bell telephone, with its armature, while entirely disconnected from any wire or battery, was capable of reproducing the signals passing over a telegraph line. To illustrate: A wire was stretched about the walls of a room and connected with the poles of a batter; an ordinary telegraph key, but no other instrument, being included in the circuit. If a person took two telephones and applied them one to each ear, and took a position in any part of the room, he would hear on the telephone what was passing on the telegraph wire, although he would not hear the key work. The room was about twenty feet square, and the wires followed the walls once around.

This interesting and very valuable discovery makes it possible for a telegraph operator . . . , by placing himself in proximity to a telegraph wire, to read, without making connection therewith, all that is passing over that wire. It establishes the wonderful sensitiveness of this instrument and proves that the telegraphic current affects a greater surrounding space than has hitherto been thought of. As to practicality, it would seem that the privacy of telegrams is a thing of the past.

Joe Uses Obsolete Phone

This picture was sent to us by Barbara Wilcox, in Denver.

I thought you might get a kick out of this. My husband, Joe, and I took a trip to Mt. Pleasant, Utah last October (2010). Our cell phone didn't work there, so we looked for a pay phone.

We found this phone on the side of a filling station. It worked perfectly! There was even a directory. I retired from U S West in 2000.

A Telephone Family Portrait

A visitor to our web site, Allen E. Noble, retired precision sheet metal fabricator (3M), contacted us with family pictures that he has graciously allowed us to use.

Mrs Alvin Oscar Olafson at the switchboard, Four Valleys Telephone Company; Scobey, Montana; February, 1915. Postcard to Mom (Mrs. T. P. Ellis) "*was cleaning house, don't I look like it with my cap on and apron!"*

"Grandma Olafson (Mary Theresa Ellis, 1893-1970) worked for Four Valleys from 1914 to 1916, when the company was sold. She was unprepared for the photo that day, as she stated to her Mother on the reverse of that same post card and to my Mother. Either an itinerant photographer walked in, or Four Valleys sprung a photo shoot on her and gave her a souvenir print. It's amazing that the company allowed her to care for her first-born terrible-two, Allen Ellis Olafson (1913-1940), in the office!"

Unknown man makes a call in Halvor Olafson's business office, Bowdon, No. Dak., August, 1908.

Mr. Olafson was Grandma's father-in-law.

"Another family mystery involves telephony. Grandma posed in 1906 with her Brother, William Ellis (1873), a lineman in his work clothes."

Uncle Bill Ellis (telephone lineman) & Grandma (1906).

Why do we refer to 'dialing' a phone?

The word ***dialing*** describes the process of entering a number to be called into the telephone system. The rotary dial is mounted on a telephone and is designed to send interrupted electrical pulses corresponding to the number dialed.

The modern version of the rotary dial with holes was introduced in 1904. It was phased out from the 1970s onwards with the onset of Touch Tone dialing, using a telephone keypad instead of a dial.

Before the dial was invented, one "rang up" a friend or business. This referred to turning the crank, which caused a bell to ring at the switchboard, letting the operator know that you wanted to place a call.

How should we refer to making a telephone call now that we no longer use a crank or a dial?

DOORS OPEN DENVER

Modern Architecture: 50's & Beyond
April 16-17
More than 70 sites in and around Denver

Mayor Bill Vidal, the Denver Office of Cultural Affairs, and the Denver Architectural Foundation invite you to take an inside look at Denver's distinctive buildings and unique places during Doors Open Denver 2011.

The theme of Doors Open Denver 2011, to be held April 16-17, is "Modern Architecture: 50's & Beyond." Doors Open Denver will feature sites that represent outstanding examples of this period.

This free weekend event invites citizens to experience Denver's built environment in a new way – from the inside. Tour Denver's architectural gems and lesser-known treasures on your own or participate in expert tours led by members of the architectural community.

THG volunteers will be giving tours of the historic Mountain States Telephone and Telegraph Company building at 14th and Champa Streets in downtown Denver. We will give a morning and afternoon tour each day during Doors Open Denver. See: ***www.DenverGov.org/DoorsOpenDenver***

Historic MST&T Headquarters Building

The Early Growth of Telephone in Western Washington State

by Don Ostrand

This article continues describing the development of the network in Western Washington State.

ARLINGTON JUNCTION - ARLINGTON

In 1897, a telephone lead was built from a point on the Everett-Mount Vernon line about three and one-half miles south of Silvana (known as Arlington Junction) to Arlington. It was built of 25-foot poles carrying one #9 iron circuit on brackets. A few years later a 6-pin cross arm was placed on this lead and a second circuit of #9 iron wire was strung.

Arlington was a town located on the Northern Pacific Railway Company's Sumas line. It was the center of the lumbering industry of that area, as well as the distributing center for the Stillaquamish River Valley. In 1909, a circuit of 172# copper wire was strung over this route in order to provide additional facilities, because of the rapid growth of Arlington and the surrounding community.

ARLINGTON - DARRINGTON

In 1912, a 25-foot pole lead, carrying a circuit of 172# copper, was constructed between Arlington and Darrington, a distance of approximately 28 miles. This lead was built along county roads, with toll stations at Hazel, Fortson, Lamson and Darrington.

The construction of this lead was necessitated by the extensive logging operations in the territory.

Long distance telephone service was furnished to these points by an independent company. This is one of a few cases where

long distance was furnished by an independent company before The Pacific T&T Company or one of its predecessors established the service.

SNOHOMISH - GRANITE FALLS

In 1905, a telephone line was built between Snohomish and Granite Falls. This lead consisted of a #12 iron metallic circuit strung on Postal Telegraph Company poles. It was strung from Snohomish to a point approximately one mile north of Hartford. From this point, a new lead of 25-foot poles was built carrying a #12 iron wire strung on brackets, to Granite Falls.

A considerable logging industry had developed at Hartford and Granite Falls, and mines were operated at Silverton and Monte Cristo. It was because of that development that the telephone line was constructed.

In 1909, a 25-foot pole lead was built between Snohomish and Hartford. The contracts on the Postal Telegraph Company's poles were removed.

SNOHOMISH - MONROE - GOLD BAR

In 1890, a 25-foot pole lead was built from Snohomish to Monroe. This lead carried a #12 iron wire circuit, which connected with local stations at Monroe and along the route of the lead between Snohomish and Monroe. During the years following, this lead was extended east through Sultan and Startup to Gold Bar, with additional local stations being installed at each of these points. The Florence Rae Copper Company, which operated mines at Index, built a telephone line from Index to Startup, where connections were made with the local line working out of the Snohomish Exchange. By 1903, there were a total of 23 stations connected to this circuit. The building of this local line was brought about by the completion of the main line of the Great Northern Railway Company in 1890 and by the subsequent development of communities along the line.

By 1904, the business had developed to such an extent that it was found impracticable to continue to furnish local service out of Snohomish to subscribers at Monroe, Sultan, and Startup. A local exchange was, therefore, established at Monroe. The stations on the old local circuit between Monroe and Snohomish were moved to the Snohomish and Monroe exchanges by the stringing of additional wire. This relieved the original #12 iron wire for toll purposes between Snohomish and Monroe, for which a toll charge was made.

In 1905, exchanges were established at Sultan and Startup, and the stations located between these points (which were connected with the original #12 iron wire circuit) were cut to the various exchanges, thus relieving the original circuit for toll purposes.

By 1906, the #12 iron wire toll circuit proved to be inadequate and an additional 172# copper circuit was strung between Snohomish and Sultan. At that time a 10-pin cross arm was placed between Snohomish and Monroe.

In 1910, an additional 172# copper circuit was placed between Snohomish and Sultan.

By 1911, the exchange at Snohomish had lost its importance, due to the growth of

Everett. Quite naturally, the toll business became tributary to Everett, which then required the placing of an additional 172# copper between Everett and Snohomish. During the same year it was necessary to rebuild approximately two miles of lead east of Sultan due to road improvements.

By 1912, an additional circuit was required between Snohomish and Monroe, but before this could be placed it was necessary to rebuild this section of the lead as it was badly in need of repairs.

In 1913, the pole lead between Monroe and Startup was replaced with a 25-foot graded lead carrying one 10-pin crossarm. The wire on the old lead was transferred to the new lead and an additional 172# copper circuit was placed between Monroe and Sultan. Considerable changes in the lead between Snohomish and Monroe, were also necessary, due to re-location of roads.

SEATTLE - BELLINGHAM - BLAINE

The first step in the development of the present extensive toll system north of Seattle was made in 1893, when a lead of 25-foot poles carrying a grounded 172# copper circuit was built between Seattle and Snohomish (then the largest town between Seattle and Bellingham and the county seat of Snohomish County). This lead followed a winding road through Kenmore and Bothell to Snohomish.

From Smoke to Text… What's Next?

What do smoke signals, Pony Express, copper telephone lines strung over high mountain passes, and Facebook all have in common?

They all play a part of the rich telecommunications history of Colorado! Stop by the Denver Public Library 5th Floor from **May 6th through July 30th, 2011** to learn about telecommunications history in Colorado.

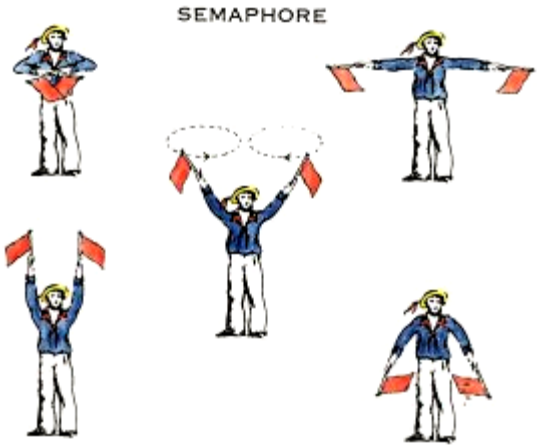
Conveniently located at the Civic Center Plaza, the exhibit at the library would be a perfect stop while visiting our state Capitol and/or the Denver Art Museum.

Land Lines: How Soldiers Communicated During WWI

by Marty Donovan

Land line usage is diminishing. Today many people rely on cell phones and the internet as their main method of communicating. However, land lines were the main source of communication at the beginning of the 20th century; they even aided troops on the battle fields of World War I.

In 1914, the telecommunications industry was growing at a rapid rate. The telegraph was still widely used, while telephone companies developed more modern and efficient telephones. More people could communicate with each other as telephone companies expanded land line connections.



Communicating in this manner wasn't so easy for soldiers trying to send messages from trenches to command posts during World War I. In fact, at the beginning of the war, troops used signalers to send messages by waving flags and lamps and by reflecting mirrors in the sun to send images. Unfortunately, enemy soldiers could see these signals and would attack troops in those areas.

So both sides began laying land lines to change the way each sent messages. British officers instructed soldiers to dig ditches at least one and a half feet deep to place the land lines. The Allied troops used field telephones made up of wooden boxes that held two dry cells, a magneto generator, a polarized bell, an induction coil testing plug, and a "Hand Telephone C Mk.1," that hooked up to the inlaid land lines.

This method of communication didn't ensure 100% reliability in connections. As both sides fought to gain ground, troops exposed these land lines either by firing across to enemy territory and striking buried lines or exposing them while digging new trenches in no man's land. Both sides could cut enemy land lines, or worse, they could tap into them to learn about various battle plans and positions.

Since these phones sent messages via an analog current, the Germans could easily pick up signals through a device they created called a Moritz Station. Through this machine, the German troops could translate messages that Allies sent to each other from almost a mile away.

If lines were cut, both sides needed to repair them by digging new holes; but what soldier had time to shovel a ditch one and a half feet deep to lay new land lines while being fired upon?

In 1915, British Captain A. C. Fuller invented a digital current phone, known as the Fullerphone, to help solve interception problems. Soldiers could accept and transmit Morse code over a single wire 20 miles long.

WWI Fullerphone

The Fullerphone was created to send digital currents. These weren't as powerful as analog waves, so it made it more difficult for the Germans' Moritz Stations to pick up the Allies' messages.

To help scramble messages, Fuller placed a device called a "buzz chopper" in each phone. People at the sending and receiving ends had to synchronize it so that they could send and receive information. Anyone trying to intercept these signals couldn't translate the messages as the buzz chopper jumbled communications.

After World War I, telephone companies accelerated telecommunications technology during the 1920s and 30s. By the middle of World War II, both radar and sonar devices were put into place to detect enemy aircraft and ships.

Since then, further inventions have replaced land lines. It's hard to believe people can now communicate with phones that transmit messages over cellular towers.

If you'd like to read more about telecommunications during World War I, see:

- *http://ew30.blogspot.com/2010/01/electronic-warfare-in-ww1-telegraph-war_14.html,*
- *http://www.worcestershireregiment.com/wr.php?main=inc/signaller_ww1*
- *http://www.english.illinois.edu/maps/ww1/bourneessay.htm*

Many telephone company employees joined the armed forces and were employed as members of the signal corps. Often groups from a particular company and geographic location were deployed together.

From Puget Sound to the Rhine *is a record of the 405th Telegraph Battalion Signal Corps – 1917-1919. The 405th was made up primarily of employees from Mountain States and Northwestern Bell. This book can be seen at our archives, and a copy is available from our virtual gift shop at: www.telcomhistory.org*

Happy Spring!