



THE MANIFEST

NEWSLETTER OF THE SOUTHERN OREGON CHAPTER, NRHS – MARCH 2007

MEMO FROM THE PRESIDENT We still have many openings for docents this year in the concession stand, 1107 and the CB&Q; most of these openings are in the afternoon in the 1-3 P.M. time slots. If everyone would take just a couple of slots we could be completely scheduled for the summer. Please check your schedule and let me know what openings you would like to reserve. (Ref. last month's news letter for the schedule).

We are not going to attempt to open displays this year at the last minute if and when someone shows up as we did last year. If we don't have someone signed up for a time slot we will not open that display. Last year we had as many as 700 people tour caboose SP1107 on run days and it would be unfortunate if either of our cabooses had to be closed on a run day.

Last year a small core group of members showed up to work as docents every run day for the entire summer. This was much appreciated but very unfair that we don't give this group a break now and again. So please everyone sign up for at least one run and help our club be successful.

You can reach me at 541-772-6255 evening, or at engmgr@medfab.com.

WELCOME ABOARD This month we welcome aboard Joe and Leslie Vandiver of Wilderville, Oregon. We hope you enjoy being a part of our club and be able to attend future chapter meetings and functions.

At the February Chapter Board meeting Treasurer Jerry Hellinga reports that our membership now stands at 90 (66 full members and 24 family members). This is a long way from not too many years ago when we had less than ten. Thank you all for your continuing support. With the Medford Railroad Park becoming more popular each year, and with several other projects planned/or already underway, we fully expect our membership to grow a lot.

HAVE YOU SIGNED UP YET? Ric Walch has already written a plea for more docents this year, but this editor wants to say it again. Last month we sent a 2007 Railroad Park sign-up sheet to each member living in southern Oregon. So far the response has been poor. We are asking you to please consider signing up as a docent for one or more of the 14 Sundays the Railroad Park is open. You can choose a two-hour or four-hour shift to help at our concession stand, SP caboose, or our CB&Q Visitor Center Caboose.

For the last 5 or 6 years it has been a core group of the same five to seven chapter members that have regularly staffed our area of the park. Some of these members are rightfully getting "burned out" and need to have a few people step in and give them a break. Plainly speaking, if we cannot get more chapter members involved we will have to close some of our displays to the public, which also translates into fewer donations.

Remember, we're not talking about a lot of time. We're only open to the public 14 Sundays a year, and only four hours on each of those Sundays. Please help your chapter out by volunteering a little of your spare time at the park. You'll see it's a lot of fun helping the public learn more about what we do.

WOW! IT'S COLD AT THE PARK! This month's MANIFEST is four pages smaller than normal. Why? This winter has been one for the record books. In a normal year we might get one snowstorm at the Railroad Park; most of the time we have none. Since January 16th we've had three heavy snowstorms dump many inches of snow, plus several smaller ones dropped more snow, which melted away in a few hours. On top of that, most of the high temperatures during the day rarely got about 40 degrees, with some never getting above freezing. Needless to say this has had a very dampening effect on any work at our Medford Railroad Park. So, little work means little news and photos.

One of the few volunteers coming to the park during the winter is Steve Bruff. Steve is working on several smaller projects until the warmer weather returns. Steve has acquired some parts for our Fairmont Model S-2 motor car.

Steve says, "I purchased, from Jim Wiederrick, of Belt, Montana, three axle bearing housings (with new bearings) for \$40/each (usually \$100+ each) and one new drive belt for \$80 (usually \$100-200 if can be found). Wiederrick had gathered together many parts in order to put together a S-2 motor car; however, his wife got tired of the whole thing and gave him the ultimatum to 'sell, or else'. So, he sold."

In addition to the motor car Steve reworked the old wooden steps that allowed visitors to look inside the boiler of Medco No. 4. Over the last ten years the old steps became quite rickety and posed a danger. The new steps – painted blue – provide a better viewing platform.

One other project in the works is a door for our Southern Pacific concrete telephone booth. The door was missing when donated to the chapter, so now Steve will use his excellent carpentry skills to make an exact replica. Steve and this editor discussed which of the three types of doors we want for our booth and we settled on a design that likely was last fixed to this booth. When finished this will better illustrate how the booth once looked. Some interior work will also be done, as well as the removal of many decades of moss on one side, and a general cleaning.

This editor has spent most of the winter at the park doing track repair and maintenance work for the Southern Oregon Live Steamers. I did manage to help Jerry Hellenga load the many trailer loads of leaves I gathered since the park closed last October. We just finished loading his dump trailer with four large loads of tree branches. Besides cutting up the numerous fallen tree limbs I gathered dead branches in areas that haven't been trimmed in at least five or six years, so this year's pile of branches is quite large. However, from now on we should be able to keep on top of the trimming of branches to a more reasonable level.

We look forward to better weather in March as we step up our efforts on finishing our concession stand and resume work on the other chapter restoration projects. It'll be interesting seeing how much effect having Daylight Savings a few weeks earlier will have at the park.

MEMBER MANUALS COMING SOON The new Member Manuals are just about ready for printing. At of this writing the manual is a 2,000 word, 56 page booklet containing 32 photos and three charts and maps. Left for me to do is to update the membership roster for 2007, and as soon as we learn the results from the vote on the proposed new by-law changes at the March membership meeting, I will include them in the new manual. Each manual will have the member's name printed on the cover page. After all the changes are made I'll go ahead and print them. They should be ready for distribution at our April membership meeting. For those not making the meeting I will send them via the U.S. Postal Service.

PS: We hope many of you can attend the April meeting not only for an evening of good fellowship and entertainment, but handing out the Member Manuals in person will save your chapter quite a bit on postal expenses.

CHAPTER WEBSITE TO CHANGE Over the last decade and more, our Chapter website has brought us many, many e-mail questions and communications. Chapter member Larry Tuttle has been responsible for maintaining the site, but over the last 5 or 6 years, Larry has been extremely busy with his business and has had practically no time to monitor the site.

At the February 27th Board Meeting chapter member "Stretch" Manley announced he's preparing to launch a new chapter website with a different carrier to replace the old one. "Stretch" says the new site will allow for more information to be posted, more links to other sites, plus it will also have new

features, such as the selling of chapter souvenirs through Pay-Pal. Many members have offered Stretch plenty of photos and historical information so our website will be a greater source of information. We'll let you know the new address and when it's ready.

CHAPTER BOARD NOTES In last month's newsletter we announced our plan to have a float for Medford's Pear Blossom Parade in April. Upon learning that the parade will take place on the same day as the opening for the Medford Railroad Park, we canceled the idea. However, we decided we will participate in the City of Central Point's Fourth of July parade, which falls on a Wednesday this year. This July 4th date will not conflict with the Railroad Park or other chapter activities, and it's a very popular event. We'll have our 5-ton flatbed truck all decked out with chapter banners, a ringing locomotive bell, operating steam whistle and more.

In addition to the float we'll have a table set up at the City Park to sell souvenirs, hand out informational pamphlets, and talk to the people.

LATEST DONATIONS TO THE CHAPTER Chapter members Jim & Sue Lekas of McMinnville sent this editor a 34 pound box filled with employee timetables and magazines. Thank you Jim and Sue for your donation.

- 13 issues (Vol. 1 No. 1 through Vo. 4 No. 1) of *THE PROSPECTOR*— a wonderful publication of the Rio Grande Modeling & Historical Society.
- 47 copies of Southern Pacific's Sacramento Division Employees Timetable No. 7 (Effective April 24, 1977).
- 25 copies of Southern Pacific's San Joaquin Division Employees Timetable No. 3 (Effective September 15, 1974).
- 18 copies of Southern Pacific's San Joaquin Division Reissue of Special Notice No. 1 (Effective January 1, 1975).
- A few issues of the Pacific Railroad Society's *WHEEL CLICKS* and RailPac's Western Rail Passenger Review newsletters.

The *PROSPECTOR* magazines and the newsletters will go into the chapter archives. The many copies of the Southern Pacific Timetables will be sold as souvenirs at our chapter's new concession stand at the Medford Railroad Park, and at our annual Rogue Valley Railroad Show. If any member is interested in purchasing a copy, call this editor and I'll make arrangements. Phone: 541-944-9176 or e-mail me at SPFlimsie@aol.com.

From Southern Oregon Live Steamers Club President, Roger Phillips our chapter received the following:

- *RAILROADS OF TODAY* by Kip Farrington, Jr.
- Southern Pacific Railroad's 1976 Rules and Regulations.
- An assortment of AMTRAK public timetables and tour guides.
- An assortment of magazines (Pacific RailNews, Timberbeast, and NRHS bulletins)
- A red 3-ring binder that was used inside SP caboose #1111 (sister to our chapter's SP caboose #1107).

Thank you, Roger for your donation.

A LOOK BACK IN TIME Twelve years ago last month – February 4th 1995 to be exact – our chapter successfully carried off a monumental project: the moving of four railroad cars from a private lot in Ashland to the Medford Railroad Park. The cars were donated to the Chapter by Ted Clay, who acquired the cars with the purchase of the Ed Krahel property.

Using the services of a 50-ton crane from Batzer Construction, and six heavy trucks provided by Harshman Trucking, Ron Halicka Equipment, Southern Oregon Underground, and LTM Inc, we lifted the two cabooses, one box car and one flat car over the fence (and blackberries) onto lowboys waiting in a narrow alley.

After winding their way down through residential Ashland, the trucks headed north on I-5. As the red CB&Q caboose hit its stride on the Interstate, a raccoon appeared on the caboose platform, leaped off and hit the ground running.

A new stretch of track alongside the front park fence was ready for the CB&Q caboose and SP flat car. After the CB&Q caboose got caught on one of the fence gates, ripping it up, the two cars were positioned and set on their trucks.

The BN caboose was placed on the same line of tracks with the SP flanger and Medco No. 4. The ground was saturated from winter rains so the box car was placed on cribbing until the ground dried out enough to place it at its new location. Quite a bit of the busy day's activities was recorded on videotape and we often show some of it to visitors at the Railroad Park.

Next General Meeting! The March general membership meeting will be held Tuesday, March 13th at 7:30pm inside the Rogue Valley Model Railroad's clubhouse at the Medford Railroad Park. We hope you will attend for a short evening of entertainment and good fellowship.

Your Chapter Officers for 2007

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GOOD OLD DAYS OF RAILROADING Before we begin this month's article from Ed Williams I have sad news to report. Last month I published an *Oregonian* newspaper clipping of May 31, 1918 which gave an account of a deadly train collision of two SP freight trains on the main line south of Portland, OR. The newspaper article was provided to us by retired Southern Pacific Engineer G.F. "George" Williams. Last month several chapter members informed me that George Frederick Williams passed away in Eugene, Oregon on January 18, 2007 at age 91.

This month's article will be the first of several parts by E.O. "Ed" Williams. Ed Williams began his long railroad career in 1923 with the El Paso & Southwestern Railroad as a "Pumper" at water tank pumping stations on the EP&SW. After completing civil engineering schooling he rose in the ranks of Southern Pacific, finally becoming Division Engineer on SP's Rio Grande Division. He was the last Rio Grande Division Engineer before the Rio Grande Division was later dissolved into two other divisions. Mr. Williams passed away in 1994 at age 91.

CHANGES IN RAILROADING – MY HALF CENTURY (Part 1) by E.O. Williams The world about us changes constantly. Most changes are imperceptible. They slowly but inevitably creep up on us. Sometimes they're radical changes that hit us like an earthquake, but in any event change is eternal.

In this chapter I shall endeavor to recall some of the thing I have seen as day after day moved on into the months and the months into the years until before I realized it my half-century had passed and it was all over but the memories.

Throughout the preceding pages I have from time to time mentioned changes that took place: the passing of the motor cars in favor of motor trucks, even though the change was made without thought as to how many places on the railroad were inaccessible to trucks. There were stretches such as the line from Strauss to Anapra on the North Line and Vastodon to Anapra on the South Line that were so sandy a burro would have difficulty negotiating the terrain. But we were expected to maintain it with trucks. From Anapra to El Paso on both lines was about as bad.

The Company did allow each Division a road grader and an operator. I had more than 1000 miles of Main Line and Branch Main tracks to maintain. The first thing that every Division Engineer and his Roadmasters began to do was to start scraping out some kind of road along the track to make it accessible to the trucks. Wherever we had a bulldozer restoring embankments or cleaning out drainage channels we put it to work excavating roadways in the vicinity. Little by little we got some roads in several places. On one trip from Lordsburg to El Paso with Mr. Lamprecht and Jaekle, Mr. L. began talking about how Division Engineer Frame on the Salt Lake Division had been taking the decks of scrapped flatcars to make bridges over ditches opposite culverts on the truck road. I took this to mean that if Division Engineer Frame could find a way on the Salt Lake Division, Division Engineer Williams should also on the Rio Grande Division.

Up at Tucumcari we had an oil separator that all the waste water from the roundhouse and the engine servicing area was passed through. All the oil had to be removed before the water could be released to the city sewer. The oil from this operation was accumulated in a pond and from time to time had to be disposed of.

Roadmaster Church of the El Paso District had carved out a road on the right-of-way from Anapra to Strauss, but in places it was very sandy and only a four-wheel drive vehicle could make it through. I had Roadmaster Bell pump the waste oil from the pond into tank cars and ship it to El Paso District. Roadmaster Church rigged a system of piping to attach to the outlets of these cars and slowly move them along the track between Strauss and Anapra soaking the sandy places with that oil. When the volatile materials evaporated the road was left in fair condition.

We had just done this when I made the trip mentioned above with Mr. Lamprecht. As soon as he saw all that fresh oil he had visions that we were buying expensive oil for that. But when I explained how we were handling it by improving our roads with material we had to dispose of somewhere was when he told me about what Frame was doing on the Salt Lake Division.

Not long after that I was in San Francisco to attend a Division Engineer's meeting so I asked W.J. Jones, the Engineer Maintenance of Way and structures how I could obtain some of the flatcars. He told me if my budget would stand about \$500 a piece for them I might get some. That was out of the question so when I got back to El Paso I asked Ronnie Jensen, the Assistant General Storekeeper, who had charge of disposal of surplus and scrap materials what we could do and what price he could make me. I told him we wanted none of the wheels, trucks, drawbars, airbrake equipment or any of the metal except the frame and the deck. He let me have the cars for \$42 each. Then as the Mechanical Department condemned any flatcars and turned them over to Ronnie for disposal, he would have his men strip them down, load them on flatcars and ship them to me wherever we wanted them.

I would alert the Roadmaster to whom I was shipping the cars so that he could have a crew available at the spot where he wanted the culvert, stop the train, let his men skid the old flatcars off on the ground and then send the train on its way. At a later date he would come back with his crew and install the flat car and then grade the approaches up to it with a bulldozer and have a bridge over the waterway. We also bought scrap tank cars from the Store Dept. the same way, cut the ends out of them and cut the cars in half and thus we were able to make two culverts from one old tank car.

By the time my days as a Rio Grande Division Engineer were over we had a passable road along the Main Line Main Track from Lordsburg to Tucumcari and most of the line El Paso to Douglas. Some of the branch lines we were never able to get roads to because of the difficult terrain. We continued to operate over them with motor cars for maintenance work.

[Ed then turns to the subject of SP's famous 2-8-8-4 AC-8 Class steam locomotives. -tj] One thing about them we learned after some use was that they required good water as we began to experience cracked boilerplates in the fireboxes where any scale accumulated on the interior. The company had a consultant from Kansas City come down here to survey the situation and make recommendations. As a result of his study we installed a filter and water softener at Santa Rosa, Orogrande as well as zeolote softeners at Tucumcari, El Paso, Carrizozo, three at Coyote to treat all the Bonito water and on the West End at Deming. I was amazed in the latter case because Deming had advertised their water for many years as being 99-44/100% pure. We had to put a softener there but when we got to Lordsburg and ran a test the old man told me we needed none there as the water was good without any treatment.

The next step was conversion of these huge machines to oil when the coal mines at Dawson were shut down. Not too long after that they began to move the huge engines out to the western areas to work in the mountain districts and I saw no more of them except the No. 3800 itself, which I saw cut up for scrap here in El Paso.

The North Line between El Paso and Strauss is on a uniform 0.6% grade from Anapra to Strauss, a distance of nine miles. During the days of steam power this was a difficult pull for a locomotive to handle the tonnage that it could easily handle from Strauss to Lordsburg, a distance of 132 miles. As a solution for this the railroad built six-yard tracks at Strauss the same length as the siding. Then the El Paso yard would run a Strauss Turn, a train that ran only to Strauss, set the cars out on one of the six tracks, and then returned to El Paso. A through eastbound train would be called out of El Paso for Lordsburg and upon arrival at Strauss would pick up enough cars from those in storage there to complete the train to its capacity and then be on its way. This happened most often when there were

heavy movements of cantaloupes or lettuce in refrigerator cars. These cars always went West empty, as they could not be contaminated with anything because they had to be kept clean for the handling of fruits and vegetables. No suitable lading was ever found for the return trip so they always came back empty. During the off season when no fruits or vegetables were moving I have seen all six of those tracks full of Pacific Fruit Express empties in storage.

Strauss is located just at the top of the mesa or a better way of expressing would be to say it was at the beginning of the descent from the mesa. This is all very sandy territory out there in the desert and subject to the westerly winds that swept across there every spring. As a result of these two factors I have seen every track in Strauss including the Main Line Main Track covered to the top of rail with sand. Once the sand was up to the top of rail then it would blow on across.

Someone, I think perhaps Division Engineer L.E. Lyons, decided that a dike of sand some 8 or 10 feet high pushed up by bulldozer on the windward side of the track might catch the blowing sand and thereby eliminate or at least alleviate the condition. As this was a locomotive water station there was water available for irrigation of some trees so he planted a row of salt cedars along the top of the dike and ran a pipeline to them to supply irrigation water.

To the surprise of all concerned this dike instead of stopping the sand diverted it upward so that by the time it came down it was beyond the tracks. This worked so well that we then got an appropriation and built several miles of these dikes in sand territory. The sand in the yard tracks at Strauss blew away to a great extent, and with the coming of the diesels, the six tracks and the wye upon which the engines had been turned that brought the Strauss Turns out in the old days were all removed. The siding and Main Track was all that had to be protected. This method of planting trees seemed to do the job and the Los Angeles Division received authority to plant many miles of them in the California desert between Los Angeles and Yuma. To my knowledge there has been no sand on the tracks at Strauss for more than 25 years.

The method of change from motor cars to trucks has been explained. Along with this change we had been gradually changing over from digging in ties to using a tie pusher to remove the old ties. Low joints were no longer tamped up by the use of a tamping pick in the hands of a track laborer. Each of the trucks assigned to track maintenance forces had a small air compressor that would operate four pneumatic tamping guns. The replacing of Main Track rail was now done by a system gang equipped with gasoline driven spike pullers, track wrenches, and rubber tired cranes for the removal of the old rails. Adzing machines were used to smooth the ties where they had become place cut by the tie plates under the old rail. A machine was used to put hot asphalt on the newly adzed surface of the ties; more rubber tired cranes with roller attachment moved the ribbon rail from its position along the track to the new tie plates, and spike driving machines to replace the man with the spike maul.

As the number of men on the assigned maintenance gangs had been reduced from the old EP&SW figure of one track man to each mile of track to about four men to each 30 or miles, the installation of the new ties had to be done in a different manner. Each Division was to organize a tie gang that would spend all its time moving from one Roadmaster's district to another installing his allotment of new ties for the year. The Maintenance of Way people in San Francisco had not completely decided just how the tie gangs were to be organized, and left it up to each Division to try to work it out themselves. Each Division was given a spike puller, tie pusher, an excavator to clean out the bed where the old tie had been removed and prepare it to receive the new tie, a track mounted air compressor to drive the spike driving guns and then told to make a gang.

The Tucson Division got equipment before we did on the Rio Grande Division. I do not think Lee Lyon was completely sold on the idea, as he would not assign enough men to keep the equipment working all day. They would install ties for the first half-day, set the equipment off the track and spend the other half-day spiking up, tamping ties and doing what we called "back work".

One day Godfrey Lyons, Assistant Engineer of Maintenance and Structures, in charge of our end of the railroad called me and said, "Ed, how long would it take you to organize a tie gang if you had equipment?" I had an extra gang of 28 men and a foreman at Lordsburg that I had been using for various jobs up and down the railroad but I had run out of appropriation money jobs for them. I was on the verge of cutting off all but about six men and the foreman so that I would not lose the authority for the gang by abolishing it entirely, but would reduce the expense.

My reply to Mr. Lyons was, "I can start tomorrow morning."

He then told me that Tucson Division was trying to get by with 16 men and the machines were idle about half the time and he was going to send them to me. I told him to ship them to Roadmaster Hogland at Lordsburg. I then called Hogland and told him they were coming and I wanted him to take Extra Gang #6 with its 28 men and organize a tie gang at Lordsburg and start working East. I would order some cars of ties from the creosote treating plant for him. He was a good organizer so I left it up to him. I learned long afterward that the AT&SF had a tie gang working not far from Hogland's headquarters at Deming so he went over there to observe their operation and when our equipment got to him at Lordsburg he was ready to go.

We had a good foreman, Dean Bradley, running the gang. As soon as he got going good and had everything organized to suit him, I began to find a telegram on my desk every morning saying they had installed 400 ties the day before. I knew that they never hit that exactly every day but we were installing about 8000 ties every month and I knew that would eat up my year's allotment in a very satisfactory manner.

In fact, almost every year Godfrey would call me along about the first of October and ask me how many ties I could put in in addition to my year's allowance. He would usually give me 4 or 5 thousand more saying some Division was going to fall down on their installation. What Foreman Bradley was doing was holding back some when he exceeded 400 ties, so that if he had a bad day account equipment failure or excessive amount of traffic, he had a few up his sleeve to keep his average up.

One day I was on an inspection trip on the East Line. The tie gang was working in the vicinity of Coyote so Roadmaster Barnum and I went out to see how they were progressing. He and I sat down on a pile of ties and I told him I wanted to figure out exactly what each man on the gang was doing so we could determine if we were wasting labor, needed more for efficiency and to determine just what we were doing. So I put them down one by one just what they were doing in my little notebook. We had used 28 men because that is the number we had on the gang when we started it. We decided that we were just about right and left it at that.

A few weeks later I was called to San Francisco to a Division Engineer's meeting. We had already submitted our ideas for an agenda but the organization of the tie gangs was not on it. However the subject came up and as it was being kicked around the table without arriving at any conclusion, Godfrey Lyons said, "Ed, get up there to the blackboard and tell these fellows how to organize a tie gang. The Rio Grande Division is always the guinea pig anyway." My heart sank as here I was up before all the Division Engineers from New Orleans to Portland, Oregon, the Chief Engineer-System, Chief Engineer-Texas and Louisiana Lines and the Chief Engineer of the Cotton Belt, all of whom had expressed varying opinions as to how it should be done.

I was at a loss where to begin or what to say when I remembered my little notebook. So with all confidence I stepped up to the board and showed them how it took exactly 28 men and a foreman to make a tie gang and showed what each of those men did. We were told a decision would be made and all of us informed so that the gangs would be the same system wide. When the official lineup came out they figured 26 men and a foreman.

A year or two later Joe Darnell, the Supervisor of Automotive and Work Equipment on the Rio Grande Division and I were instructed to go to Sierra Blanca on the Texas and New Orleans Lines to watch the performance of some new machine they were starting with there. While there they showed us where their tie gang was getting in 600 ties per day BUT they had a 45 MPH slow order on the track behind them and it would stay on until a surfacing gang covered that area. We had always kept our track up behind the tie gang so that at the end of each day the track was good for normal speed for all trains. On one occasion I was making an inspection trip over the Rio Grande Division with Chief Engineer Williamson when he asked me, "Ed, why is it that the Rio Grande Division puts in ties year after year and never has a slow order on the track behind the gang?"

I told him that we set no records for tie installation but I had always been under the impression we were put here to maintain the track to run trains over and we were doing that with the least amount of delay possible. The answer of course was the fact that we set our scarifier to cut a minimum depth for the ties going in the track. We then tamped the new ties WITHOUT the tie plates on them, and then we jacked up the rail just enough to slip the tie plate in place and this we always had a good firm track behind the tie gang.

When I came to the Southern Pacific in 1928 the weights of rail for Main Line Main Track were 110# and 130# per yard depending on the annual tonnage over the line. On curves it depended also on the degree of curvature. The turnouts at sidings were #10 except in unusual circumstances. Mr. W.H. Kirkbride was Chief Engineer shortly after I came to the Division. He made a trip to the AREA (American Railway Engineers Association) Convention in Chicago and was astounded to learn that almost all first class railroads were using #12 or #14 turnouts at their sidings and soon he started proceeded to get #12 turnouts made a standard on the Southern Pacific. Had he only know it the EP&SW, which the SP acquired in 1924, had standardized on #12 siding turnouts many years before. Soon we were replacing #10's with #12's as switch frogs came up for renewal. The necessitated changing the entire track layout at each turnout but it permitted trains to enter or leave a siding at higher speeds.

While Mr. Kirkbride was at the convention or as a member of one of the committees, he asked us to look into the idea of changing the design of the standard railheads. The AREA standard provided for 3/8" radius on the corners of the head with 12" radius between. The result was that shortly after new rail was laid that 3/8" radius was soon worn down and the metal was ground away and wasted. We were instructed on each Division to study the problem and submit recommendations to the Chief Engineer who in turn would handle with the American Railway Engineers Association with a recommendation from the Southern Pacific as to changes the study suggested. I was given the task of making the study on the Rio Grande Division.

My first assumption was that the radius of the corner of the head should conform to the average freight car wheel so that there would be a maximum of bearing from the start instead of a small area represented by that exposed by the 3/8" radius. I made up a number of templates of many different radii starting with the 3/8" and by degrees getting to as high as 1". Then I went down in the El Paso freight yards and began to try my templates on hundreds of car wheels to determine which radius most closely approached the flanges of the car wheels. I found that most of them were near the 1" radius and we recommended that the corner radii be 1" on each side of the rail with a 14" radius connecting the two. After many months the AREA came out with a new standard of 14" radius for the middle of the head blending into a 1" radius on each side but still retaining a small amount of 3/8" below that. Their final standard approached my findings very closely, which did not make me feel that I was very far from the proper approach of my analysis.

Along this time the Southern Pacific changed to 112# and 131# instead of 110# and 130# that had been standard for many years after they moved up for 90# and lighter weights. In 1940 the standards were again changed to 113# and 132# head-free. In the head-free the metal on the lower corners of the head was reduced and this metal added to the top of the rail in order to provide more metal for a wearing surface. After a few years of this it was determined that the smaller wearing surface on the side of the head presented to the flanges of the wheels wore away more rapidly and therefore there was no saving in this design. Then the company adopted 119# and 136# as standards. The design of the heads on these two rails was full ball, not undercut, as was the head-free rail.

Another change that took place in Southern Pacific standards was the adoption of the Talbot transition spiral where the alignment of track passed from curve to tangent to permit trains to make a smooth transition from curvature to straighten up on the tangents and vice versa. The Southern Pacific had used the Hood transition, which had been developed by Chief Engineer Hood many years ago. It consisted of a series of connected simple curves of varying degrees of curvature in a series of changing radii. The Talbot spiral transition was a true spiral and was used by the EP&SW. As soon as the Southern Pacific took over the EP&SW and saw the superior ease of application and the better riding qualities of track where the Talbot spiral was used, it was adopted system wide and all of the field men of the Engineer Department were required to secure a copy of the book and to learn to use the spiral every time a curve was re-run. Of course, a curve was restaked and resurfaced the proper super elevation tags were applied to the ties at 50 foot intervals through the length of the spiral so that the trackmen could always check the elevation at any time and correct it if any spot began to sink. This was especially true at joints as they took a pounding from the wheels of passing trains. About 75% of line and surface problems arose in connection with joints. The advent of ribbon rail without joints eliminated a lot of maintenance problems. **[To be continued]**