HANDMAIDS OF PROGRESS

How the Telegraph Became the Railroad's Most Useful Servant.

AT FIRST THE WIRE WAS UNCERTAIN

Origin of the "Double Order" System and the "Circuit Breaker" Invention of a Noted Railroad Executive.

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This is the story of three devices, two connected with the telegraph, and all originated by one man, which have simplified practical railroading immensely and are now in use wherever the locomotive puffs its way over roads of steel. The telling is especially apropos at this time, when the relations between one of the greatest railroads and one of the greatest telegraph systems are being dissolved.

The telegraph was impressed into the service of the railroad soon after the electric wire had been taught to write, it being seen early that through its aid the running of trains could be managed with greater safety and certainty than in any other way. It was because of this that for many years nearly every telegraph line in the land was strung alongside some steam road, and the need of the wire on the part of the railroad brought about the extension of the telegraph, over thousands of miles, years in advance of profitable commercial demands therefor.

This was of great advantage to the country in many ways. But the telegraphic system thus created had one serious defect. While a message could be sent between two points on the same line almost as expeditiously and cheaply as now, the message between distant points generally had to pass over as many separate systems of wire as there were railroad lines between the sending and receiving stations. This involved relays, delays and a cost that would now be, and was then, considered excessive and exorbitant. In this evolutionary world such a condition of affairs naturally brought about telegraphic consolidation, one of the first, if not the very earliest, of the great modern consolidations that have made the United States the wonder and envy of the nations of the earth. This consolidation took the name of the Western Union Telegraph company.

Western Union's Early Advantage.

It is because the Western Union was formed by the union of many small lines, originally built chiefly for the convenience of the railroads, that its offices and not those of the younger Postal Telegraph company are to be found in ninety-nine of every hundred railroad stations in this country. Nor is it so very long ago that railroad and telegraph men would have laughed at a hint of separation between the Western Union and any of the great railroads, least of all the Pennsylvania. Yet for more than a month now the Western Union folk, peremptorily ordered off, have been busily vacating their offices and removing their wires from along the Pennsylvania tracks. By September 1 the transfer must be complete and this will mark as interesting a period in the history of the telegraph in America as the period which was opened when the late John W. Mackay organized the Postal Telegraph company.

Yet it does not follow, in the view of well informed men, that this is the beginning of the end of the Western Union's close relations with the railroads in general. The cause of the break with the Pennsylvania was brought about by the determination of the Gould railroad interests to lay their tracks into Pittsburg in spite of the Pennsylvania's objections. The Western Union's direct yearly loss of revenue (gross) will be about $50,000 a year, but the net will be much less. There is some expense and confusion incident to changing the system in the Pennsylvania's big territory and some hundreds of points will probably be abandoned as not profitable without the railroad business, but the chief disadvantage will be mainly sentimental and of course the Gould interests discounted that before they decided to lock horns with the Pennsylvania.

Early Telegraphic Train Orders.

The railroads began to use the telegraph in running trains early in the '50s, possibly in '49 or even '48. But the train order of the mid-century was crude and often ineffective. Repeatedly it brought about disaster instead of insuring safety. It was so imperfect, indeed, that some railroads gave up the use of the wire altogether after a comparatively brief trial.

Thus, in 1853, S. W. Roberts, then superintendent of the Pittsburg, Fort Wayne & Chicago railroad—now a part of the Pennsylvania system—threw out the telegraph as a help in running trains on that road because of an accident due to a misunderstood order that resulted in some loss of life and the destruction of much railroad property. The Roberts dictum continued in force till his retirement in '55 or '56. Its rescinding led to one of the most important forward steps ever taken in the development of practical railroading. This was the invention and adoption on the "Fort Wayne" road of the "Double Order" system, now used on practically every steam railroad in the world.

"Double Orders," were devised by an enthusiastic young railroad man named James D. Layng, then attached to the executive staff of the "Fort Wayne" road in the capacity of division superintendent, and now one of the most prominent of the executive men in the management of the West Shore and other Vanderbilt lines. Though he had never served as a telegrapher, having entered railroad life as a civil engineer, he was quite familiar with the electric wire. As a school boy in Pittsburg, and with his father's hearty approval, he had strung wires "all over the house," had made and charged his own batteries and had mastered the key, both as sender and receiver. He believed thoroughly in the possibilities of the telegraph as a servant of the rail and in the years the wire was taboped on the "Fort Wayne" had carefully thought out the best way of realizing these possibilities. The scheme is simplicity itself.

"Double Orders."

A large proportion of all train orders on single track roads, such as the "Fort Wayne" then was, involve two trains. They may be moving in opposite directions and be scheduled to meet at a given station, or other point, where there is a side track that will enable them to pass. Train No. 1 has lost time and to hold train No. 2 at the usual passing point till the arrival there of train No. 1 will make both late. The meeting therefore must be at a different point than is customary. Or a fast train may be due to pass and overtake a slow one moving in the same direction; one or the other of these trains may have missed its schedule and therefore need instructions. Or a wildcat train or engine (one not running on any regular schedule) may be sent out and all trains along the line it is likely to meet or pass must be notified. In all such cases it is the use of the telegraph alone that enables the business of the road to go on safely and without interruption.

Before the "double order" system each conductor to be instructed received an individual message from the train dispatcher. Sometimes the message was very full, telling him of the movements of other trains as well as directing his own; sometimes its meagerness was extreme, all explanatory clauses being rapidly left out. So unskillfully were the messages often worded that, as Mr. Layng remembers, a large proportion had to be "interpreted" for the conductors before they would consent to go ahead.

Nowadays, under the "double order" system, when messages are to be sent directing conductors of two trains, both men receive the same message. And this is how the thing is done:

"Copy!"

From the wire reports which he is constantly receiving the dispatcher knows at 9:40 a. m., say, that train No. 1 (eastbound), which should be at station Q at 10 o'clock to meet and pass train No. 2 (westbound), has fallen behind, and at the moment is approaching station U. Train No. 2, on time, is approaching station O. The dispatcher calls up the operators at stations O and U, directing them that there will be orders for the conductors of the two trains, No. 1 at U and No. 2 at O. Then he sends the one word, "Copy," following it with an order reading something like this, if there are no serious complications:

"Trains No. 1 and 2 will meet at S. In the absence of further orders, No. 1 will wait there until the arrival of No. 2."

This message is given in duplicate to both conductors, who are signalled that orders are awaiting them as they pull in at stations U and O. Before either can then proceed he must notify the dispatcher that it has been received and understood. Such an order would be extremely simple, but whether simple or complicated, the aim is to make all orders direct and "understandable." Sometimes, even now, there are misunderstood orders, though forgotten orders are more frequent, but such cases are comparatively rare and it is hard to see how a better system could be devised.

The "Circuit Breaker."

To Mr. Layng also are the railroad and telegraphic worlds indebted for the "circuit breaker." It was some time after the success of the telegraph as an adjunct of railroading had been conceded all round before the wire was used by trainmen to telegraph news of accidents from points between stations. Till then it was the custom when there was an accident between stations to send a train hand back to the nearest station and he would telegraph the news from there to the superintendent's office.

But someone thought it feasible to carry telegraphic instruments on the trains, so that in case of accident the line could be cut and the news wired promptly. This plan worked admirably, but it had the drawback that cutting the wire interrupted the regular transmission of messages, thus deranging the business of the railroad and stopping all commercial telegraphing, if there were but one wire, until linemen could be sent for and the wire mended. Sometimes this might not be possible, especially in the early days, for hours, and the resulting loss, confusion and delay from intercepted messages became a serious matter.

The "circuit breaker" which young Layng invented to overcome all this is as simple as his "double orders." It is merely a sort of double clamp, not larger than a pocket knife, which is fastened to the wire that is to be cut in such a way that it may be severed between the two ends of the clamp. By this device the wire may be tapped without interrupting the regular flow of telegrams at all, except for the brief time required to wire news of the accident to the "super." By a simple device on the side the clamp itself, which holds the severed wire ends together and prevents them from falling to the ground, furnishes the path over which the electric fluid travels past the point of cutting after the message for which the wire was cut has been sent.

Mr. Layng might have increased his wealth a lot through this device had he wished, since it is now in universal use by the railroads, but he took out no patent and has been quite content with the knowledge that his ingenuity has made railroad operation simpler.

"Stringing Time Tables."

The third simplification of railroad operation due to Mr. Layng is the use of threads, pegs and a big board, representing a railroad line, or division thereof, in time table making.

In the early days, when there were only two or three trains a day each way to be got over any railroad, the making of the time table was simplicity itself, but as railroad business grew the practical men who had to blaze the way in all executive railroad matters were much puzzled for a simple time table making scheme. No one knows who thought of the use of "cross-section paper," the vertical lines standing for hours and minutes and the horizontal ones for the stations and sidings on the road, while the trains were represented by lines running diagonally. At all events, this method was in use in the '50s, and George W. Fulton, superintendent of the Steubenville & Indiana railroad, now a part of the Panhandle system, taught its mysteries to young Layng. To him the system seemed the simplest that could be devised, but the method was slow and cumbersome, the diagonal lines for the trains having to be drawn in. Often these lines had to be drawn, erased and redrawn repeatedly before they were got in perfect shape, and thus the making of a time table was an exceedingly slow job. One day the young man had a bright idea, which he at once carried into execution by having a big, smooth board made, which he fastened upon the wall. Then he divided the board vertically with horizontal lines, each line representing one mile and the whole of them the total length of the road. Then he divided the road horizontally with twenty-four vertical lines, each representing an hour. Each hour space was subdivided by twelve smaller lines, each representing five minutes. Then he stretched silk threads diagonally across the board to represent the trains, fastening the threads at the points where they cross the station lines with needles.

On the first experiment this method was found far superior to the old one, and today it is used by every railroad in the world that runs trains enough to make the preparation of its time table a complicated task. The stringing of the threads is generally undertaken on each road by officials of some consequence in the executive department. After it has been accomplished the working out of the time table, as the passenger sees it, is merely a matter of clerical application.

Elementary Time Table Board.

The diagram given with this article represents the time table board of the imaginary "Annandale & Lancaster Railroad," eighty miles long, for the six hours beginning at 12 o'clock noon and ending at 6 p. m. There are four trains each way, the lines (representing threads) running diagonally downward from left to right representing threads that stand for southbound trains, and the lines running in the opposite direction (upward from left to right) standing for northbound trains. Southbound trains take odd numbers, northbound even numbers. Train One is an express leaving Annandale at 12 m., making forty miles an hour and only two stops between terminals. Its diagonal is more vertical than that of the slower trains, and it is off the rails and out of the way in two hours. Train Three is a freight train leaving "Annandale," the northern terminal, at the same time as Train One. It is supposed to get over the road in six hours, the running time being about thirteen miles an hour. Trains Five and Seven are local passenger trains, making all stops and running at about twenty-eight miles an hour.

Trains Two, Four, Six and Eight, northbound, are the opposites of the southbound trains and run on practically similar time, but as the southbound trains have the right of way, the northbound trains are, at times, run faster, or slower, as the necessities of the case demand, in order that they may meet at stations (where there are sidetracks, of course, for passing) or at special sidings put in where there are no stations for the express purpose of allowing meetings and passings. There are two of these extra sidings on the "Annandale & Lancaster R. R."—"Hall's" and "Smith's." Such sidings are to be found on all single track roads. The freight trains are supposed to stop several minutes at each of the meeting and passing stations, hence the double pegs at such stations. The regulation time table worked out from the board is appended. It should be understood that the board for the full day would represent twenty-four hours and that the speed of the trains in actual practice would not be as uniform as here shown, variations being necessary for grades, curves, etc.:

"ANNANDALE & LANCASTER RAILROAD."

SOUTHBOUND TRAINS.

Stations Miles.	1 Ex. M.	3 Frei't. M.	5 Pass. P. M.	7 Pass. P. M.
Annandale....	12:00	12:00	2:00	3:15
Bristol 15	....	1:12	2:35	3:48
Chester 5	....	1:30	2:48	3:55
Dayton 10	....	2:15	3:12	4:18
	P. M.			
Ellsworth 8	1:00	2:52	3:30	4:32
Florence 12	....	3:40	3:58	4:58
Graytown 5	....	4:00	4:05	5:08
Hopeville 5	1:30	4:38	4:15	5:17
Jackson 10	....	5:20	4:40	5:40
Knoxville 5	....	5:45	4:55	5:52
Lancaster 5	2:00	6:00	5:00	6:00

NORTHBOUND TRAINS.

Stations Miles.	2 Ex. M.	4 Frei't. M.	6 Pass. P. M.	8 Pass. P. M.
Lancaster	12:00	12:00	1:20	3:20
Knoxville 5	....	12:15	1:30	3:30
Jackson 5	....	12:45	1:45	3:40
Hopeville 10	12:28	1:00	2:12	3:58
Graytown 5	....	1:20	2:25	4:08
Florence 5	....	2:30	2:38	4:18
Ellsworth 12	1:00	3:20	2:58	4:48
Dayton 8	....	4:10	3:20	5:00
Chester 10	....	4:52	3:35	5:15
Bristol 5	....	5:08	4:00	5:26
Annandale....15	2:00	6:00	4:45	6:00

WALTER MORRIS.

The feud between the Hargis and Cockrell families in and around Jackson, Ky., has borne unexpected fruit. Fire insurance companies doing business in that disturbed section are canceling policies because of threats of arson made by the opposing factions.

Uncle Sam's New Big Gun

Cannon Which Throws a One-Ton Shot Twenty-One Miles.

The most powerful weapon in the world, which Uncle Sam is to use along with other monsters of its kind in coast defense, has been completed at the Watervliet arsenal after four years' labor, and now lies in the seacoast gunshop there, awaiting transportation to Sandy Hook, where its remarkable estimated strength will be proved or disproved. It is very likely that this tremendous weapon will never be fired at an enemy; but even so, the great expenditure of money it has necessitated will not be wholly wasted, for who can estimate the moral force exerted on hostile parties by a gun that is forty-nine feet long, weighs 150 tons and can throw a missile sixteen inches in diameter and five feet four inches long, weighing 2,370 pounds, a distance of twenty-one miles? Such a gun ought to be to a nation what a bulldog is to an orchard or an elaborate burglar alarm system to a bank. This big gun is so heavy that it cannot be shipped to Sandy Hook by rail like ordinary little cannon. It weighs more than the heaviest locomotive, and the railroad companies will not take the risk of delivering it safely; so one of the big New York wrecking companies will pick it up and put it aboard a barge, and thus take it to Sandy Hook by water. It is expected that within a few weeks the first shot will be fired from this monster gun, and that event will be regarded with much interest by all military powers.

The one thing about this sixteen-inch gun is not its great length or its enormous weight, but the almost inconceivable distance to which it can throw a missile. Major James M. Ingalls of the Fifth artillery and for many years instructor at the artillery school for officers at Fort Monroe, is probably the most expert officer in this country at estimating the flight of projectiles. Some years ago the British government was trying a 9.2-inch gun in England. Artillery experts from all over the world were invited to make an estimate of the range, and Major Ingalls plotted the fall of the shot only a few hundred feet short of the actual distance, while the other estimates varied from 1,500 yards to a few miles short. This same Major Ingalls estimates that the sixteen-inch gun will send its one-ton bullet 20.978 miles. With this gun mounted on Sandy Hook it could reach all of Manhattan as far north as Central park and any part of Brooklyn; or, set up on Mount Tom it could pump shell into the midst of Thompsonville. Such at least is the result reached by Major Ingalls' figures. The firing table for the gun, prepared by Major Ingalls, shows that this range is attainable with a muzzle velocity of 2,300 feet per second, the necessary angle of elevation being forty degrees. The trajectory of the projective shows that in ranging to 20.978 miles the shell would reach the maximum elevation of 30,516 feet. This is enormously greater than the maximum range hitherto obtained by any other gun, which at present stands to the credit of the Krupp 9.45-inch gun, which was fired on the Meppen range, in the presence of the emperor of Germany, April 28, 1892. The measured range was found to be 22,120 yards, or, roughly speaking twelve and one-half miles. The greatest height reached by the Krupp shell in its flight was 21,458 feet, and the time occupied between the firing of the gun and the striking of the projectile was 70.2 seconds.

Major Ingalls' calculation or prophecy is not universally accepted. Foreign ballistic experts are skeptical. Says the Scientific American: "If we are to believe the artillery experts of the Krupps and a German artillery officer who writes in a recent issue of La Revue Technique, American estimates of the extreme range of which the new sixteen-inch gun will be capable are altogether too sanguine. The range of this weapon as calculated by Major James M. Ingalls, the head of the artillery school for officers at Fort Monroe, Va., is 20.9 miles. But the German expert denies that the gun can range further than sixteen miles, while the writer in La Revue Technique claims that the maximum range of our new army gun is only about two-thirds of Major Ingalls' estimate, or from fourteen to fifteen miles. The latter estimate is arrived at by the method of vertical speeds expressed as functions of times of flight."

This big gun is the first of a series of gigantic weapons which were proposed for the seacoast defense of the United States. The Endicott board, which had the whole subject of seacoast under consideration, several years ago recommended that ten similar guns be mounted at San Francisco, eight at Boston and four at Hampton Roads. It has taken about four years to build the gun, work on it having been begun on May 14, 1898. Because of the more urgent need of other classes of guns work has been suspended at intervals on the big gun. Five hundred and sixty days of eight hours each are the estimated time required to manufacture a sixteen-inch gun from the time the forgings are received from the steel works. The forgings in the rough weigh 368,000 pounds. Of the estimated time of manufacture 193 days are given to various boring operations, 175 days to the turning and 192 days to the shrinkage, rifling and other delicate operations. The original intention was not to manufacture more than one gun of this caliber each year. The capacity of the seacoast gun shop in addition to the above work is estimated at sixteen twelve-inch, sixteen ten-inch, sixteen eight-inch and twelve twelve-inch rifled mortars each year. With two shifts of eight hours each the capacity of the shop would be doubled. The field and siege gun shop's output can readily be brought to 450 field guns and seventy-five siege guns and mortars per year, in addition to the work in the seacoast gun shop.

The sixteen-inch gun does not differ materially, except in the proportion and distribution of its parts, from the average built-up army guns, says the Troy Times. It consists of a long inner tube; a heavy jacket extending from the breech to about six feet beyond the trunnions; the chase hoops, extending from the jacket to the muzzle, and the jacket hoop, enclosing the jacket, and extending from the breech for about half the length of the gun. The length of the gun is 49 feet 2 9-10 inches; diameter of breech, 5 feet; of muzzle, 2 feet 4 inches; of the bore, 16 inches. The total weight of the forgings of the gun, as received from the steel works, was 368,000 pounds. The finished gun will weigh about 300,000 pounds, leaving the amount of steel removed from different parts during manufacture about 68,000 pounds. The projectile of the gun will be 5 feet 4 inches in length, and the penetration, in steel at the muzzle, corresponding to muzzle energy of 88,000-foot tons, is 42.3 inches. Other guns have been built before this in other countries of larger caliber, but none of them ever approached in power the new sixteen-inch rifle. A gun built for the Italian government had a caliber of 17.75 inches and threw a projectile weighing 2,000 pounds, but its muzzle energy was only 40,000-foot tons as compared with 88,000-foot tons, which is the muzzle energy of the Watervliet gun. France built a gun with a caliber of 16.5 inches, with a projectile weighing 1,700 pounds, but it developed a muzzle energy of only 56,000-foot tons and a muzzle velocity of only 1,700 feet per second. A gun built by the Armstrongs for the British navy had a caliber of 16.25 inches and throws a projectile weighing 1,800 pounds, with a muzzle velocity of 2,100 feet per second. The British gun comes the nearest to rivaling the new gun in power, but it falls short 25 per cent.

The gun will be mounted upon a disappearing carriage equipped with a counterpoise, weighing 130 tons, for elevating the gun to the firing position. In spite of its enormous bulk and weight, the gun is as easily handled as the lightest field piece. The breech block weighs an even ton, but a child can operate the machinery which opens it and swings it clear of the gun. Three separate movements are required to open the breech, but they are all controlled by a set of worm gearing that is very simple in operation and requires only a few turns of the crank. When the crank is first set in motion the breech makes a half turn, releasing the threads of the interrupted screw by which it is held in place in the breech, a few more turns suffice to withdraw the block from the breech and then the entire breech block is swung clear of the breech on a heavy hinge or consul, leaving the chamber open to receive the charge. Every part of the gun is built as accurately as the works of a watch. To prevent the possibility of a premature discharge there are two cunningly devised safeguards. The gun may be fired either by electricity or by an ordinary friction primer. When the breech starts to open the very first movement disconnects the electrical firing apparatus, and it remains disconnected until the last movement in closing the breech. The first movement to open the breech also prevents the insertion of a friction primer. As the breech block makes its first turn a thin, flat piece of steel slides over the vent and remains there until the last turn of the crank that locks the breech. If smokeless powder is used 576 pounds will be required for a charge; if the old-fashioned black powder is used 1,176 pounds will be necessary.

Colonel Joseph Pearson Farley, commandant at Watervliet, has been responsible for the successful construction of the sixteen-inch gun. His initials are countersunk in the steel face of the gun and he is said to have remarked that he would rather have his name there than any other place in the world. Colonel Farley served during the civil war with the army of the Potomac and in the siege of Charleston, S. C. Since the war his service has been at arsenals and foundries, as a member of ordnance boards and as assistant professor at the United States military academy. In addition to his duties as commanding officer of the arsenal, Colonel Farley is president of the board for the examination of ordnance officers for promotion and president of the statutory board for the test of rifled cannon. No type of gun is accepted for the service without passing the tests prescribed by this board.

(Issued Under Authority of the Railroads of Nebraska.)

Statement Showing the Great Wealth of

BUTLER, COUNTY, NEBRASKA,

And the Small Proportion Returned for Taxation.

Statement showing variations in assessments in Butler county, between 1893 and 1900:

Returned for Assessment in 1893.	Value.	Per Unit.	Returned for Assessment in 1900. Unit.	Value.	Per Unit.
242,858 acres improved land	$ 948,469	3.91	333,917	$1,639,612	3.46
107,008 acres unimproved land	321,545	3.00	56,651	150,464	2.65
11,093 horses	102,944	11.15	9,803	47,926	5.15
21,685 cattle	77,960	3.60	29,570	90,744	3.02
19,353 hogs	23,804	1.23	30,227	26,117	.85
Agricultural implements	14,349	....	.....	9,723	....
Railroad and telegraph	621,204	....	.....	514,362	....
All other property	408,458	....	.....	873,707	....
Total assessment	$2,518,733			$2,251,061	

The census report for 1900 gives the following returns for agricultural wealth in Butler county:

	Val. Farms.	Val. Farm Bldgs.	
364,507 acres land	$ 10,957,240	$1,764,210	$12,721,450
Agricultural implements	.....	.....	431,960
Live stock	.....	.....	2,059,740
Products not fed to live stock	.....	.....	2,691,187
Percentage of land value returned for taxation			2 3-10 per cent
Percentage of agricultural implemeent value returned for taxation			2 3-10 per cent
Percentage of live stock value returned for taxation			8 per cent

For the purpose of confirming these figures, we give a list of property sold lately in Butler county, showing consideration paid and amount returned for assessment:

Part.	Section or Lot.	Township.	Range or Block.	Consideration.	Assessed Val., 1902
N. E. ¼	11	15	3	$10,000	$651
S. E. ¼	36	15	2	9,000	638
N. ½	13	15	3	8,000	625
E. ½ S. E. ¼	8	16	2	3,600	285
W. ½ S. E. ¼	8	16	2	3,600	280
N. ½ N. W. ¼	24	16	3	3,400	280
N. ½ N. E. ¼	13	14	1	3,400	320
N. ½ N. W. ¼	22	14	3	3,600	293
S. W. ¼	28	15	1	6,400	685
S. E. ¼	33	15	3	8,000	555
N. W. ¼	1	13	2	7,200	629

From the best information we can get for the present year, lands are assessed at but 7 per cent of their true value in this county.

In Butler county the taxes are quite generally paid; the county is in default but $4,212.89 state tax and $1,985.04 of this amount has been owing for over thirty years; as a matter of pride, if nothing else, a county as rich as this should wipe out the little amount delinquent, as it would not be a hardship to do so.

It is the delinquent taxes that have caused the state debt.

This is another one of the rich counties in Nebraska and the statement that the banks made in July, 1901, to the bank directories show that the whole county is prosperous.

We give a statement of the condition of the banks in the county in July, 1901:

Town.	Name of Bank.	Cap. & Surp.	Deposits
David City	City National Bank	$ 62,500	$ 250,000
David City	First National Bank	87,000	230,000
David City	Central Neb. Natl. Bank	61,000	216,820
Brainard	Bank of Brainard	25,000	91,200
Bellwood	Platte Valley Bank	17,400	49,000
Bruno	Bruno State Bank	6,500	72,000
Linwood	Far. and Mer. Bank	11,000	55,500
Rising City	Rising City Bank	25,000	70,000
Ulysses	First Bank of Ulysses	31,800	163,000
		$240,380	$1,227,520

The ridiculous amount returned for taxation in this county can be readily seen when it is known that in that year all other property in the county than railroad and telegraph property was returned for assessment in a sum amounting to $1,736,695, while this bank statement shows that the capital and surplus and deposits of money in the banks alone amounted to $1,567,850.

According to the report of the auditor, the banking institutions returned the following amounts for taxation in this county:

Moneys of bankers and brokers	$7,670
Credits of bankers and brokers	2,297
Bonds, stocks and warrants	22
Shares of capital stock	571

The statement of the condition of the banks shows that they were conservatively managed and had their funds well in hand, and this statement shows that they are conservative in estimating values for taxation as well.

None of the railroads in Butler county pay much profit. In 1900 they report the following as the result of their operations:

	Miles.	Net Earnings per mile.	Total Net Earnings in County.
F. E. & M. V.	64.59	$1,115.42	$72,033.38
O. & N. P.	9.82	208.29	2,045.40
O. & R. V.	32.75	721.15	23,944.16
			$98,022.94
L. & N. W.	27.13	Loss 299.30	8,117.01
Apparent profit in operation			$89,905.93

Out of which the railroads paid taxes amounting to $25,683.72 in Butler county.

Pitts., Bess. & L. E. R. R. pays 1 3-10 per cent net earnings for taxes.
Pennsylvania R. R. Co. pays 3 7-10 per cent net earnings for taxes.
B. & O. R. R. pays 5 per cent net earnings for taxes.
Railroads of Nebraska pay 10 6-10 per cent net earnings for taxes.
Railroads of Butler County, Nebraska, pay 25 6-10 per cent net earnings for taxes.