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1.—Claude; son of G. V. Stone, Springfield. 2.—Eller Mae and Deller Grace; daughters of J. Foster, Arthur City, Tex. 3.—Katherine; daughter of C. Haralson, Sherman Shops. 4.—Alvin Mayberry; son of agent, Frisbee, Mo. 5.—Lula; daughter of A. A. Owens, Springfield. 6.—Phil and Betty Beckerdite, Springfield, Mo. 7.—Harold Wells; grandson of H. A. Amerson, Mammoth Springs, Ark. 8.—Ruth and Opal; children of section foreman Dildine, Thomas, Okla. 9.—Mildred Fenner; daughter of chief clerk, local freight office, Kansas City. 10.—George Lodge, Jr.; son of secretary to general manager. 11.—Son of D. L. Darmon, engineer, St. Louis. 12.—Gladys; daughter of G. V. Stone, Springfield.

FRISCO RAILWAY BOWLING LEAGUE

SEASON OF 1924-1925

Team Standing and Averages Including Games
January 9, 1925

Teams	Games	Won	Lost	Percentage	High Single	High Three
Interline	45	29	16	644	960	2,597
Engineering	45	28	17	622	938	2,647
Tower Grove	45	26	19	578	903	2,657
Freight Traffic	45	25	20	556	934	2,569
Auditing	45	22	23	489	916	2,550
Passenger	45	21	24	467	883	2,441
Revising	45	17	28	378	886	2,531
General Freight	45	12	32	273	789	2,288

TEAM RECORD

High Three

Tower Grove	2,657
Engineering	2,647
Interline	2,597
Freight Traffic	2,564
Auditing	2,550

High Single

Interline	960
Freight Traffic	934
Auditing	916
Tower Grove	896
Revising	886

INDIVIDUAL RECORD

High Three

Conley	643
Wilson	627
Spielman	620
Gauvin	601
Burgdorf	594

High Single

Bucheit	253
Duffy	237
Conley	237
Spielman	235
Durfield	233

INDIVIDUAL AVERAGES

Names	Games	Averages
Spielman	45	177
Conley	45	176
Bacon	36	172
Gauvin	42	171
Schaffnit	39	171
Duffy	45	169
Zeis	12	169
Wilson	30	168
Rose	45	167
Shad	39	167
McAuliffe	45	167
Houlihan	45	166
Burgdorf	45	166
Jochum	42	162
Reinheimer	39	161
Sullivan	33	161
Rohfling	45	160
Petera	42	160
Durfield	39	160
Norden	15	160
Sugrue	12	160

HIGH SINGLE—INDIVIDUAL
January 9, 1925

Kenworthy	232
Grob	232

INDIVIDUAL AVERAGES
January 9, 1925

Auditing

Games		Averages
45	McAuliffe	167
39	Reinheimer	161
39	Durfield	160
39	Kenworthy	158
27	Bullerdick	147
30	McDermott	143
3	Bird	144

Engineering

Games		Averages
30	Wilson	168
42	Gauvin	171
12	Boeing	157
42	Kranefuss	151
39	McBride	151
42	Schopfer	148

Freight Traffic

Games		Averages
45	Rose	167
42	Jochum	162
33	Sullivan	161
15	Norden	160
42	Spinner	154
27	Bauer	144
18	Curran	142

General Freight

Games		Averages
37	Braun	147
39	Wolfert	147
6	Fritz	144
45	Stemmler	142
18	Heckel	135
15	Bardgett	135
21	Baxter	135

Interline

Games		Averages
9	Tschampers	182
36	Bacon	172
45	Duffy	169
45	Burgdorf	166
42	Petera	160
12	Sugrue	160
21	Voss	133

Passenger

Games		Averages
39	Schaffnit	171
45	Houlihan	166
42	Tremayne	156
42	Eichnauer	152
42	Stoessel	145
24	Hallman	136

Revising

Games		Averages
45	Rohfling	160
30	Grob	159
36	Bucheit	158
30	McLean	155
33	Berkeley	148
30	Egan	138

Tower Grove

Games		Averages
45	Spielman	177
45	Conley	176
39	Shad	167
12	Zeis	169
45	Weisheyer	156

F. W. ROSE, Secretary.

It Was Sanborn—Not Stanage

That trio of bowlers who represent the executive offices have informed us that it is H. S. Sanborn, assistant to the vice-president, not B. H. Stanage, who is the third member of the team. And they say that Mr. Sanborn throws a "mean" ball down the alleys.

Willard Thomas has been practicing bowling in the alley back of his apartment house. Thomas' method is to set up a row of tin cans and then roll a cat at them.

Springfield bowlers with the Frisco view with scorn the performances of the St. Louis Frisco team and "pooh pooh" the assertion that in the general offices are to be found the class of the tenpin topplers of the system.

Baseball Nearly Due

The baseball players of the Frisco are beginning to unlimber and get their arms in condition. In a few short weeks the crack of bat against pellet will be heard and it is expected that the Frisco team will lead all the rest.

THE STORM

The rain of ice water that began falling on December 18th, and the zero weather that followed, will long be recalled as causing the most complete prostration of wire service within the memory of the men on whom was imposed the enormous task of fighting this icy foe and restoring a service that is never appreciated so much as when it is not available. Wires, broken and snarled, and stretched beyond further use and encased in ice twenty times their own size, must have laughed to see the demoralization, the helplessness, the inconvenience and delay resulting from their prostration, in this Wireless Age of ours.

After raining all day of the 18th, with the thermometer ranging from freezing to five below zero, ice began forming on the wires early in the day, causing scattered breaks which were promptly repaired by linemen, but toward evening they became more numerous and long lines of poles began falling under the terrific strain, so that by 6:00 P. M. all communication was severed and Springfield was completely isolated.

In anticipation of serious trouble our six regular reconstruction gangs had been moved into St. Louis, Springfield and Sapulpa, and by 3:00 A. M. of the 19th, these gangs, consisting of approximately one hundred men, were enroute to the trouble with instructions to restore the train wire only. Former Superintendent Shaffer was in charge of the first train to leave Springfield. He found the line so badly wrecked that little progress was made, and after fifteen hours of hard work he had only reached a point six miles out, and was obliged to return with his crew to Springfield for rest.

C. H. Williamson, telephone engineer, was in charge of the second train to leave, and went to Republic to repair a break of one and one-half miles of poles. One circuit was restored at this point on the afternoon of the 19th. Work trains with linemen were sent both north and south. Mr. Claiborne was in charge of the Southern Division train and the Northern Division work was handled by Division Linemen M. H. Wood, C. C. Fawconer and R. W. Honse.

At 5:00 P. M. the 19th, a second work train was started east. This train was in charge of G. F. Linster, assistant superintendent of telegraph, ably assisted by Roy Kelton and Sidney Uhr, of the Signal Department, and E. D. McGuire, lineman on the Eastern Division. After an all night fight in the dark, with the thermometer well below zero, this outfit succeeded in working their way into Marshfield at 10:00 A. M., Saturday 20th, being forced to suspend work for rest and to avoid violation of the sixteen hour law.

In the meantime two work trains had been started east from Lebanon in charge of John Stowe, chief lineman and Assistant Superintendent Butler. Mr. Shaffer again left Springfield early Saturday morning picking up breaks behind Mr. Linster's train. The wire was thus placed in service from station to station, it sometimes being necessary to recover the ground three and four times to clear trouble that would come in behind or was passed in the dark. The wire was finally made good into Newberg at 7:00 P. M., December 22nd, and was kept in service with more or less interference. All wires were clear at 9:30 A. M., January 9th, just twenty-one days after the trouble started.

In order to maintain this circuit and clear the frequent interruptions, patrolmen were placed at all telegraph offices, with instructions to start out immediately when trouble appeared. In this way we were able to keep the wire working most of the time until further progress could be made in the work of actual repairs.

On the third day after the storm occurred we had nineteen well organized gangs, totalling over three hundred men, distributed between Springfield and St. Louis. These gangs came from Colorado, Texas Nebraska, Minnesota, Iowa, Oklahoma and Arkansas, and were accompanied by Western Union General Foremen H. W. Coble, of Denver, D. B. Sawyer, of Little Rock, J. C. Melton, C. C. Curtis and G. W. Stamm, of Omaha, and L. W. Thompson of North Dakota, and last, but by no means least, was Mr. Ward, of the New York office. All of these men rendered invaluable service. In fact, the co-operation we received from every one connected with the Western Union was wonderful and was responsible in no small measure for the early recovery of our badly wrecked plant.

Vice-President Titley, of the Western Union, in charge of plant, J. C. Hubbard, general supervisor of lines, W. W. Watt, division plant superintendent, and J. D. Campbell, division supervisor of lines, rode over the line with Mr. Brennan, and all expressed the opinion that it was the worst ice storm of their experience and that no pole line ever constructed could have withstood the ice load to which ours was subjected.

To give some idea of the ice load: It has been estimated that there was one pound of ice per foot of wire. There is an average of twenty-five wires on this lead and the poles are one hundred thirty feet apart. From these figures it will be seen that in each span there was thirty-two hundred pounds or over one and one-half tons of ice.

There were approximately thirty-five hundred poles down on the entire line, with wire breaks reaching nearly thirty-five thousand. The most of this damage was on the Eastern Division, where many poles were broken in several pieces. Crossarms were broken and much of the wire was made worthless on account of its stretched and bruised condition.

This narrative would be sadly incomplete without mention of the fine co-operation received from all departments on the railroad and the loyalty and good will shown by our employes who worked all day and well into the night, including Christmas and New Year's Day, as long as there was need for such work, without a single protest, although there were many frozen hands and feet and there was constant danger from poles made unsafe to climb by concealed breaks. There were many cases worthy of special mention, but lack of space forbids. Enough to say that General Foreman Musgrave has gathered around him a force of real men, worthy of their leader.

We must also not overlook mentioning the efficient work of our manager-wire chiefs at the several relay offices. The unusual conditions created by the storm brought out many peculiar situations unknown in the ordinary routine of testing and patching wires, and in many cases the recovery of circuits through trouble zones was possible only through the ingenious and original efforts of the wire chief.

Conservation of Fuel

By J. A. Janns

THE expenditure for fuel is the greatest single item of cost in operating expenses the railroads have to contend with. Also fuel is the one item of cost where there is the greatest room for economy. Fuel, whether in the form of coal or oil is the source of energy in use on modern railroads today. Fuel in the form of coal and oil drives our huge express and passenger trains from coast to coast at a rate of 50 to 60 miles per hour. It is the source of power that pulls our enormous freight trains for distribution of our products over the entire country. Fuel, from the time power in it is released in the form of heat energy to the time it is transmitted to the cylinders of our locomotives, is always seeking an avenue of escape and it is so elusive that a great percentage of it does escape. Economy in fuel starts from the time it is produced at the mines and oil wells to the time it is transported to coal chutes and storage tanks and placed on the tenders of locomotives to be fed into the combustion chambers of the locomotives to be changed in form of heat energy till it gets to the cylinder, and does actual work. When we stop to consider the actual value of a pound of fuel, we can get a view of the immense field we have to work on in the conservation of fuel.

Now, let us stop and examine a pound of fuel. Different coal, and different oil, do not have the same unit of value, but approximately we can say a pound of coal contains 14,000 British thermal units, abbreviated BTU, and oil 17,000 to 21,000 BTU of heat. A BTU of heat is the amount of heat necessary to raise the temperature of 1 pound of water at 62 degrees Fahrenheit to 63 degrees Fahrenheit. Heat can be converted into work and work into heat, hence there is a definite ratio between the unit of heat and unit of work, the foot pound. Modern scientists, after careful experiments, place the mechanical equivalent of 1 BTU to be equal to 778 ft. lbs. of work. If all the heat was utilized in the burning of 1 pound of coal of 14,000 BTU it would give out enough heat energy to raise 14,000 pounds of water at 62 degrees F. to 63 degrees F. This 1 pound of coal is equivalent to 14,000x778, or 10,892,000 ft. lbs. This 1 pound of coal would raise a weight of 700 pounds 15,560 feet in the air, if all the heat was utilized. It is estimated a locomotive pop opens 1 minute and 15 pounds of coal are wasted. Then a locomotive pop opening 1 minute wastes 123,000,000 ft. lbs. of work.

We ordinarily think of steam doing work but it is the heat that does the work, the steam transmits it to the cylinders. Take ordinary locomotives; the water is fed into a boiler. Water receives heat from fuel and is transformed into steam. The steam carries the heat to the cylinders where part of the heat is used in doing useful work. All the heat we can keep in and not let get away will be that much more available to use as the most perfect conditions in a heat engine is 1/7 of the heat does actual work. The best record ever made was 1 horse power per hour out of a pound of fuel. I will now try to trace out what becomes of all of this heat produced by the combustion of the fuel. First, a large part is lost in various ways by the combustion of the fuel. The largest part escapes up the stack, however, this is necessary to produce draft, but lost as far as doing work in the cylinder is concerned; then the losses by radiation from boiler and steam pipes, pop valves, leakage, by valve stems, blow off valves and various other losses make up the total losses from the boiler. We cannot stop all the losses of heat liberated by the fuel, but if we get proper combustion of the fuel, all pipes properly insulated and steam leaks stopped, to stop the escape of heat, we are taking a long step in the conservation of fuel. A great loss in fuel is ordering the engine, then standing around waiting for the train to be made up, getting out on the road, delay in passing tracks for opposing trains. Energy wasted that way should be used for the movement of the train.

Take for example train No. X, arrived at Station B going east at 8:20 P. M.; took full tank of water, 10,000 gallons; next water tank at C. Arrived C, 1:25 A. M., 5 hours 5 minutes later with empty tank. Ordinary time from B to C without delay, tonnage train, 1 hour, using 5,000 gallons. On account delay, used 5,000 gallons more than ordinary. Now we will see what this means in equivalent of work that was available in ft. lbs. 5,000 gallons of water reduced to pounds would be 41,775 lbs. to change this water into steam at 200 lbs. pressure will take 49,308,662 BTU of heat; this is equivalent to 38,362,139,036 ft. lbs. of work. Now assessing 8,000 BTU per pound of coal absorbed by 5,000 gallons of water, this 49,308,662 BTU consumed 6,164 pounds of coal which reduced to tons equals 3.08 tons. Usually the coal chute at C gets ticket for 8 or 9 tons of coal going east with tonnage train of 2,400 tons, but this trip got ticket for 12 tons. The delay this trip was standing in passing tracks waiting for opposing trains. It is then evident the loss was through radiation heat from boiler, heat radiating from steam pipes, working stoker, generator running to light steam and water glass gauges, keeping train line pumped up, flange oiler blowing steam out of nozzles and drifting valve turned on. To economize in fuel when an engine is fired up at the terminal it must be placed on train, gotten out of terminal as soon as possible and when possible favor at foot of grades at meeting points and if engine is going through do necessary work, put on train, get going again with minimum of delay and if engine does not go through get fire out and in house at once.

To conserve fuel, all pipes on a locomotive that radiate heat should be covered with a good thick pipe covering, all steam leaks stopped, boilers kept clean, all flues kept clean. Ever inspect a well managed stationary power plant? About the first thing you note is the elaborate pipe covering every inch of surface that radiates heat that can be, is covered. Every BTU that can be, is kept in and diverted to useful work. All the heat from exhaust steam that can be reclaimed is diverted to heating feed water for the boiler. The boiler itself is well covered, and steam leaks in joints, unions and valve stems is out of the question. Every locomotive, itself, is a complete portable power plant and it is just as necessary to treat it the same as any well managed power plant.

A great loss in fuel is by clinkered fires; when fire is clinkered it does not get sufficient supply of air. If a pound of carbon gets sufficient supply of air and combustion is complete, it burns to carbon bioxide and liberates 14,600 BTU of heat; if supply of air is insufficient it burns to carbon monoxide and liberates 4,400 BTU of heat. A skillful fireman that watches his fire closely does not allow banks to form in firebox which forms clinkers and does not allow pops to raise. He is a valuable man for his employer. The engineer can save fuel by starting his lubricator feeds 15 or 20 minutes before starting on trip so as to get valves and cylinders properly lubricated, not carrying water too high; if water is carried too high it passes through throttle valve and into dry pipe in form of a spray, destroys superheat, washes lubrication off of valves and cylinders, causing more friction; result is: engine will not handle train as well and oftimes stall on grade. The cut off should not be worked down further than necessary; the point is, work steam as expansively as possible, it saves fuel and water. The train should be kept up to maximum speed at foot of heavy grades without violating speed restrictions. As far as possible, do not supply boiler with more water than is being used as this causes fluctuation of steam in boiler. Also get train over division as soon as possible and on arrival at terminal report all steam leaks and anything in your opinion causing engine to consume more fuel than usual.

The train crew can help save fuel by knowing that all brakes and retainers are in released position. When a brake is found sticking, make note of it and report to proper authorities at terminal. Do not make unnecessary switches when opportunity presents itself in siding. Walk to head end and watch for brakes sticking while pulling out of siding. The car department can help save fuel by observing all boxes, see if properly lubricated and brasses in good condition so as to avoid delays on road, keeping triples cleaned and oiled, brake piston leather oiled to avoid brakes sticking, and keeping train lines tight and car doors shut. Train despatchers can save fuel by keeping down delays at meeting points, giving train main line without stopping that is approaching ascending grade at meeting points; not overloading in cold weather; also where first class trains are numerous, keep tonnage to 150 to 200 tons below maximum of engine rating. Brakes sticking on our long trains are a source of great annoyance as well the extra fuel consumed. I will give an example of an actual happening. Train called to leave G 12:25, left at 1:10 P. M. with 75 empty cars, 1,565 tons, stopped 10 minutes at H crossing; stopped automatic block signal J, delay 5 minutes, stopped 1 mile east of K, delay 5 minutes; arrived L 3:10 P. M., train pulled heavy G to L. Before leaving L, rear brakeman came over and said brakes on four cars, different parts of train were sticking near rear end.

Left L 3:20 P. M., received order there take siding and meet No. 4 at M; arrived at M, No. 4 was on main line waiting; we pulled through siding with 75 cars, they had about 20 cars. No. 2 is due at W, top of P, at

4:15 P. M. On account of taking siding at M, we had to head in at Q, foot of P, for No. 2, the longest and steepest grade on division, going west. Arriving at R, gave coal chute ticket for 12 tons, ordinarily should have given him ticket for not over 8 tons. The extra coal consumed was caused by brakes sticking and taking siding at foot of hill at P. If dispatcher gave us main line at M, would have made N for No. 2.

The individual performance of each locomotive should be watched closely, some system of keeping accurate check on amount of coal consumed by each locomotive from time it is hooked on train at initial terminal to time it is cut off from train at final terminal, should be put in effect; if this is done, performance of locomotives can be watched closely and if engine consumes more fuel than usual, or if any fuel saving device is installed, the saving can be checked up. On account most of freight engines being in pool service, it is hard to get accurate check on fuel consumption on each individual engine.

There is no doubt that great strides are being made in the conservation of fuel and if the proper spirit and co-operation will be shown by all employes concerned in handling of trains, both road and yard, it will be astounding the saving that will be made in fuel in the future. The thing to do, is for every employe concerned in handling of trains to practice the greatest economy, watch every waste of fuel, because each pound of fuel has a definite value in unit of work and should be saved and diverted to useful work.

Passenger Agents Express Their Appreciation of F. J. Deicke

Whereas, Mr. F. J. Deicke has retired as Division Passenger Agent of the Frisco Lines, and

Whereas, Mr. Deicke has on all occasions proven himself to be our friend, and by his kindly manner endeared himself to us, and has by the conduct of his office been a credit to the railroad he represented and to himself;

BE IT RESOLVED, That the City Passenger Agents' Club of St. Louis, in meeting assembled, extend to him our sincere best wishes for a long and happy life with good health to enjoy his well earned rest.

(Signed)

A. K. SCOLLEY,
WHIT B. OWEN,
R. R. SPANGENBERG,
Committee on Resolutions.

FORCIBLE ILLUSTRATION OF VALUE OF GROUP INSURANCE

By G. L. BALL, Superintendent of Insurance

To file an application for life insurance at the same time submitting proof of the applicant's death, and have both the application and the death claim allowed by the insurance company sounds like an absurdity, and so it would be in the case of ordinary individual insurance. Yet that is exactly what happened recently under our group insurance contract with the Metropolitan Life Insurance Company.

Jergen C. Ellegard, formerly car inspector at Kansas City, only made one payment under the group insurance plan but two checks for $1,000 each went forward to Mrs. Ellegard. One $1,000 straight life insurance and $1,000 accidental death and dismemberment insurance.

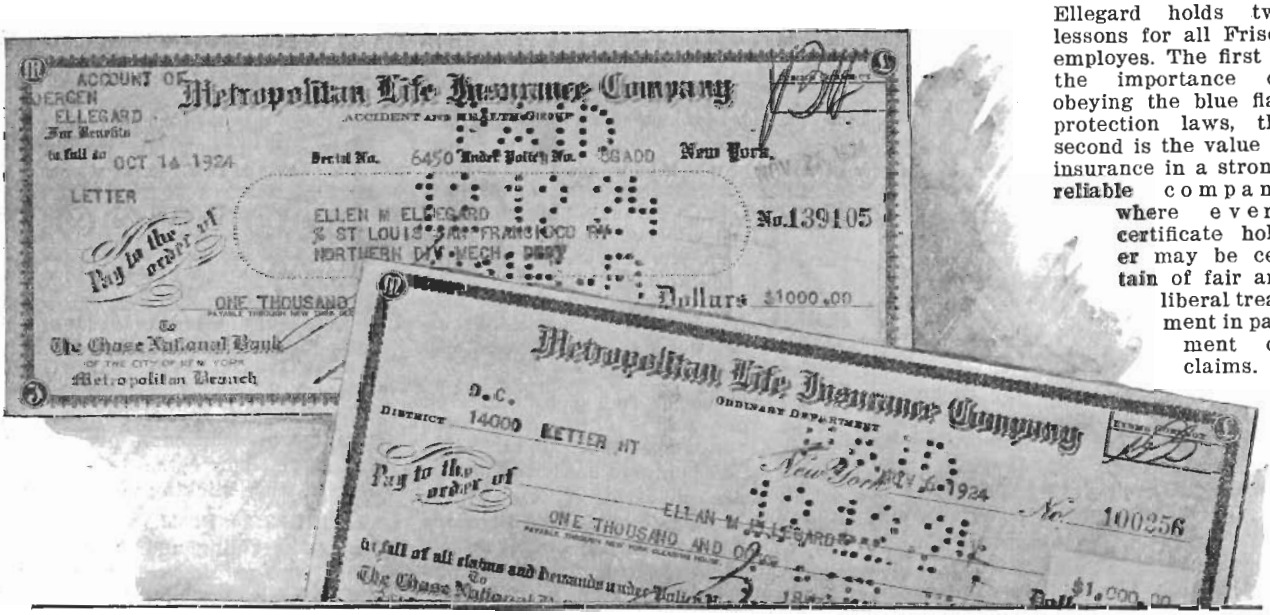
Mr. Ellegard signed his application for insurance October 1, and deduction was made from his September wages to cover the October premium. On October 14 his body was found on a steel track in the Kansas City yard. He had been struck and killed by a passing train.

Mr. Ellegard was one of our very old employes. He was known as "Dad." When safety department inspectors or his foreman talked to "Dad" about blue flag protection he would inform the speaker that he had been inspecting cars for forty years and had never even been scratched.

At the time "Dad's" death occurred the application form which had been filled out only two weeks before had not yet been forwarded to the Metropolitan. The consequence was that his application for insurance and the proof of his death reached the insurance company simultaneously.

But he had signed the application in good faith and had paid his share of the October premium so even though the Metropolitan officials had no previous knowledge of his intention to take out insurance, the claim was allowed and two checks for $1,000 each forwarded to Mrs. Ellen M. Ellegard, his beneficiary.

The death of "Dad" Ellegard holds two lessons for all Frisco employes. The first is the importance of obeying the blue flag protection laws, the second is the value of insurance in a strong, reliable company where every certificate holder may be certain of fair and liberal treatment in payment of claims.



Checks Received by Mrs. Ellen M. Ellegard, Under Group Insurance Plan