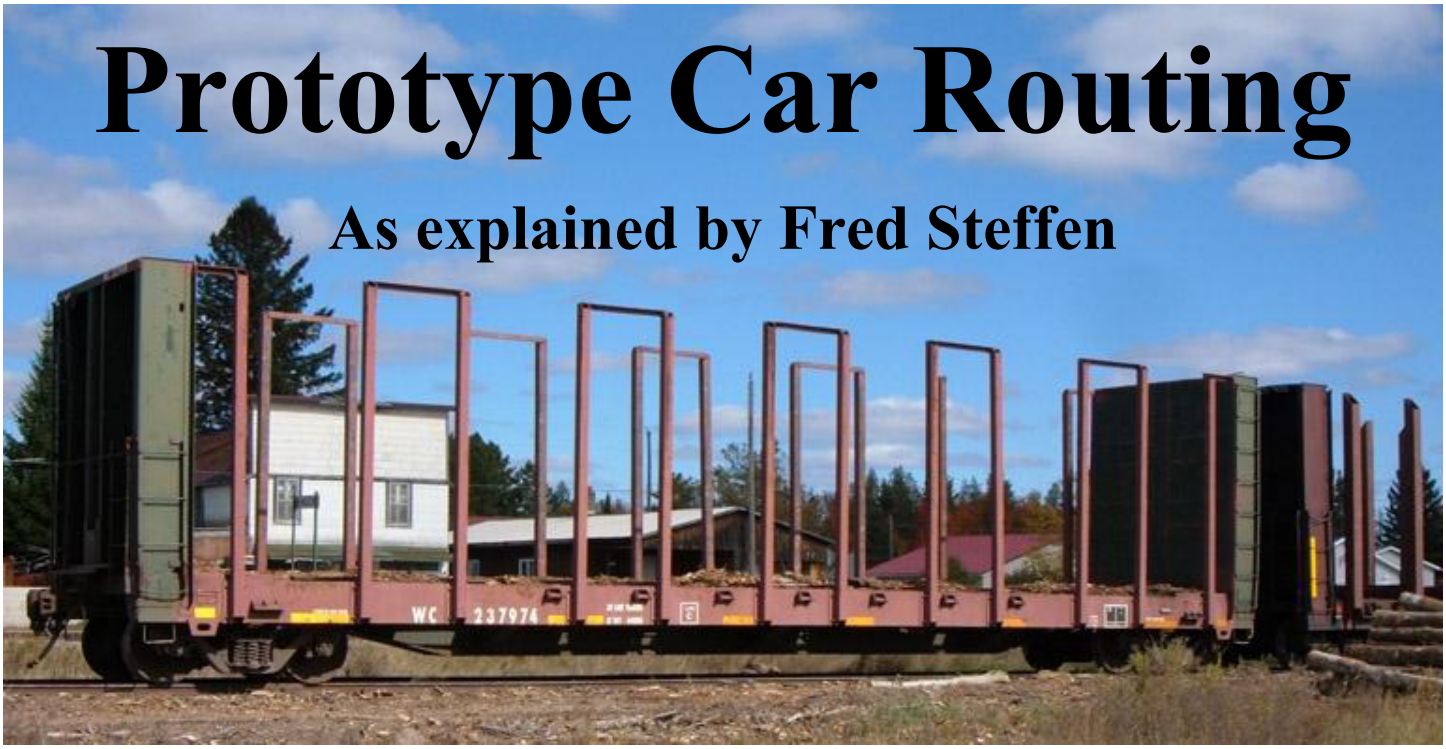
Prototype Car Routing

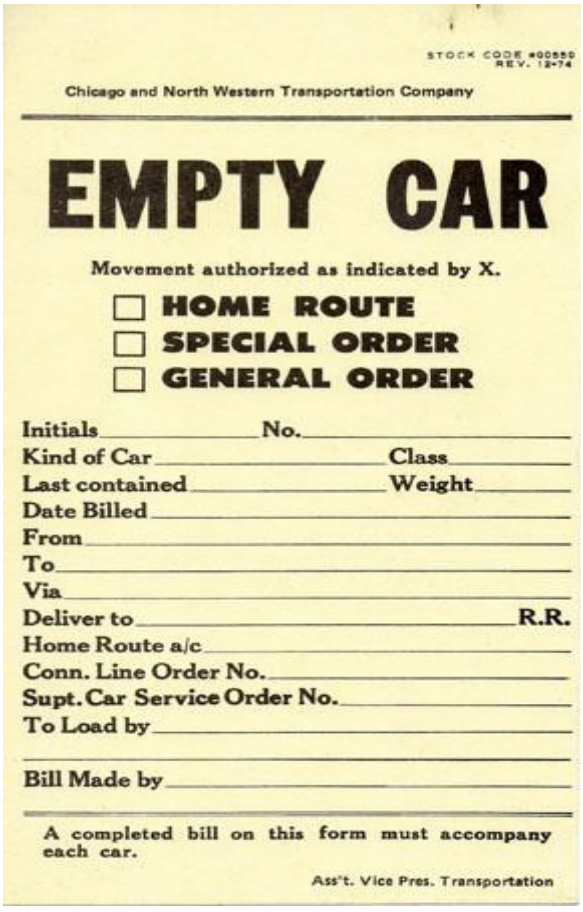
As explained by Fred Steffen



By Glenn Guerra

We are going to talk to Ted Schnepf about model operations, and go to an operating session on Ted's layout, but before we do, that lets talk to Fred Steffen. Fred grew up in the western Chicago suburbs, and was a railroad clerk his whole working career. Fred started with the Burlington Truck Lines in Chicago. Eventually, he ended up on the C&NW working as a station agent. There is seniority in the station agent jobs, just like the train crew jobs. When you are starting out, you move around a lot, and Fred worked many agent jobs around Wisconsin in the beginning of his career. He has also worked in Norfolk, Long Pine, South Morrill, and Chadron, Nebraska. Before coming back to Wisconsin, Fred worked in Bill and Casper, Wyoming. Fred's last full time job was working for the Wisconsin Central Ltd in Wisconsin. Fred is still working part time for the railroads doing job site safety. The railroads call it flagging, but it really is job site safety – keeping the workers from getting hit by the trains, and making sure they don't damage the railroad.

I wanted to talk to Fred about the station agent's job, and in particular, how the railroad directs the cars from one place to another. On the streets, we use the address to locate where we are going, for example 118 Huson Ct. Plymouth, Wisconsin. The railroad has its own system of tracks, and uses



STOCK CODE #00550
REV. 12-74

Chicago and North Western Transportation Company

EMPTY CAR

Movement authorized as indicated by X.

☐ HOME ROUTE
☐ SPECIAL ORDER
☐ GENERAL ORDER

Initials_____ No._____
Kind of Car_____ Class_____
Last contained_____ Weight_____
Date Billed_____
From_____
To_____
Via_____
Deliver to_____ R.R.
Home Route a/c_____
Conn. Line Order No._____
Supt. Car Service Order No._____
To Load by_____
_____
Bill Made by_____

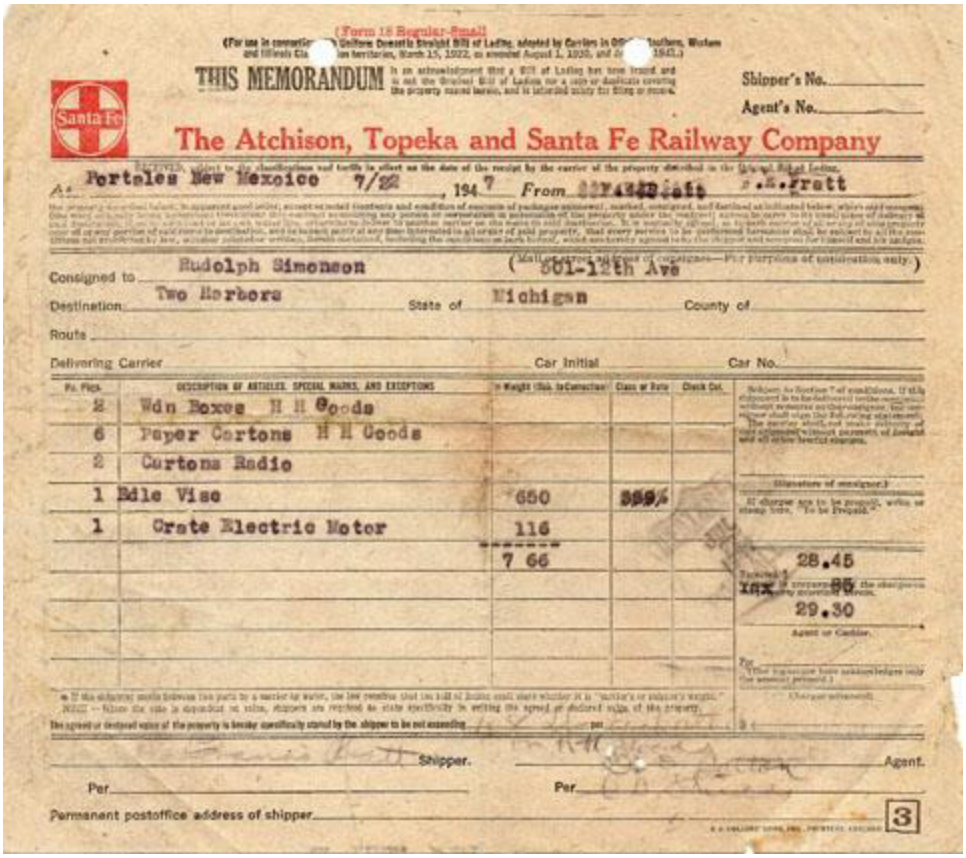
A completed bill on this form must accompany each car.

Ass't. Vice Pres. Transportation

This is an example of an Empty Car Slip. When the station agent requested a car, this slip was made out to route the car. The station agent would also make out one of these cards when an empty car was at a customer. The station agent would contact the car distributor to get direction where to send the car.

its own system of addresses. Locations on the railroads have names and are in states, just like postal addresses. The locations on the railroad are not necessarily town locations. Railroad junctions have their own names and abbreviations that can be a destination. Customers on the railroad are all located in, or near, a place with a name. All named railroad places can be found in the Official Railroad Stations list which most agents have. All places that have rail service are in this book. At this point, I said, "Let's take an example step by step." Fred suggested we use Oostburg, Wisconsin, where he worked for a while. Oostburg is located between Milwaukee and Sheboygan on the C&NW shore line to Green Bay. There was a manufacturer that made cement mixers. The siding was known by the local crews as belonging to that customer. Today sidings are numbered and referred to by that number.

The first thing that happened was the shipper called Fred at the depot, and requested a car. They needed a box car that was 10' 4" wide and 50' long. Fred would call the car distributor in Green Bay, and request a car of those dimensions. In those days, car distribution was handled on the division level, whereas today it is handled on the system level. The car distributor would find a car, and then route it to the customer Fred requested the car for. The routing was done with a piece of paper called an Empty Car Slip, and showed the customer in Oostburg as the destination. The empty car did not necessarily come from a terminal. When a customer was finished with a car, the station agent notified the car distributor, and would receive instructions on where to send the car. Sometimes the car was routed directly to the next customer. The car was not left empty on the customer siding, it went somewhere.



THIS MEMORANDUM

Shipper's No.

Agent's No.

The Atchison, Topeka and Santa Fe Railway Company

Portales New Mexoico 7/22, 194? From F.E. Pratt

Consigned to Rudolph Simonson (301-12th Ave)

Destination Two Harbors State of Michigan County of

Route

Delivering Carrier Car Initial Car No.

Pc. Pkg.	DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	Weight (Subject to Correction)	Class or Rate	Check Col.
2	Wdn Boxes H H Goods			
6	Paper Cartons H H Goods			
2	Cartons Radio			
1	Adle Vise	650	3??	
1	Crate Electric Motor	116		
		7 66		

28.45

Tax 1.85

29.30

Agent or Cashier.

Shipper. Agent.

Per Per

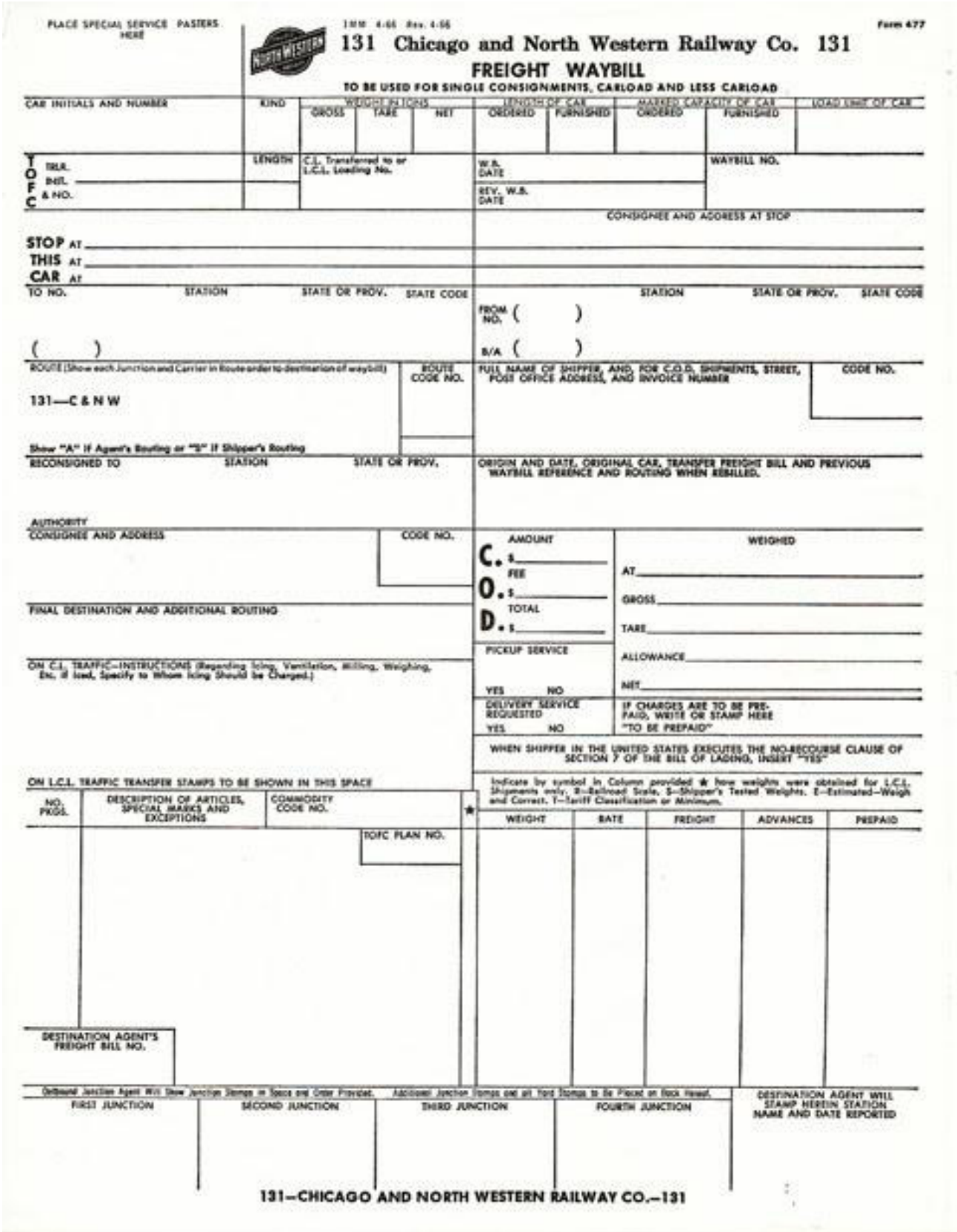
Permanent postoffice address of shipper

3

This is the memorandum copy of a Bill of Lading for some items shipped to Rudolph Simonson in Two Harbors, Michigan (it should be Two Harbors, Minnesota). The shipper was F.E. Pratt, and the freight bill was prepaid. This Memorandum was one of three parts of a Bill of Lading, and would have been kept by the shipper. This was found in the affects of the receiver, and was most likely sent by the shipper to the receiver to let them know what was coming.

In those days, the car was put on a through train and sent to Sheboygan first. The reason for this was that Sheboygan was the nearest terminal to Oostburg. At Sheboygan, the car was put on a local freight, and delivered to Oostburg. At Oostburg, the customer siding did not have an address like your house would, but the station agent and train crew knew where that siding was. It would be like sending a letter to me at the Plymouth post office, and the post office knowing where I lived in Plymouth.

Now the car was on the shippers siding, or a team track if there was no shipper siding, waiting to be loaded. The train crew marked the day and time they left the car on an Empty Car Slip, and left the slip with the station agent. If the agent was not there, or the depot was closed, the train crew left the slip in the bill box. The bill box was usually mounted on an exterior wall of the depot, and locked with a switch lock. That kept the waybills and Empty Car Slips at the place where the car



PLACE SPECIAL SERVICE PASTERS HERE

Form 477

131 Chicago and North Western Railway Co. 131

FREIGHT WAYBILL

TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD

CAR INITIALS AND NUMBER | KIND | WEIGHT IN TONS: GROSS, TARE, NET | LENGTH OF CAR: ORDERED, FURNISHED | MARKED CAPACITY OF CAR: ORDERED, FURNISHED | LOAD LIMIT OF CAR

TOFC TRLR. INST. & NO. | LENGTH | C.L. Transferred to or L.C.L. Loading No. | W.B. DATE | REV. W.B. DATE | WAYBILL NO.

CONSIGNEE AND ADDRESS AT STOP

STOP AT
THIS AT
CAR AT

TO NO. STATION STATE OR PROV. STATE CODE

( )

FROM NO. ( )

STATION STATE OR PROV. STATE CODE

B/A ( )

ROUTE (Show each Junction and Carrier in Route order to destination of waybill) | ROUTE CODE NO.

131—C & N W

Show "A" If Agent's Routing or "S" If Shipper's Routing

FULL NAME OF SHIPPER AND, FOR C.O.D. SHIPMENTS, STREET, POST OFFICE ADDRESS, AND INVOICE NUMBER | CODE NO.

RECONSIGNED TO STATION STATE OR PROV.

ORIGIN AND DATE, ORIGINAL CAR, TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE AND ROUTING WHEN REBILLED.

AUTHORITY

CONSIGNEE AND ADDRESS | CODE NO.

C. O. D. AMOUNT $ FEE $ TOTAL $

WEIGHED AT GROSS TARE ALLOWANCE NET

FINAL DESTINATION AND ADDITIONAL ROUTING

ON C.L. TRAFFIC—INSTRUCTIONS (Regarding Icing, Ventilation, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged.)

PICKUP SERVICE YES NO

DELIVERY SERVICE REQUESTED YES NO

IF CHARGES ARE TO BE PREPAID, WRITE OR STAMP HERE "TO BE PREPAID"

WHEN SHIPPER IN THE UNITED STATES EXECUTES THE NO-RECOURSE CLAUSE OF SECTION 7 OF THE BILL OF LADING, INSERT "YES"

ON L.C.L. TRAFFIC TRANSFER STAMPS TO BE SHOWN IN THIS SPACE

Indicate by symbol in Column provided ★ how weights were obtained for L.C.L. Shipments only. R—Railroad Scale, S—Shipper's Tested Weights, E—Estimated—Weigh and Correct, T—Tariff Classification or Minimum.

NO. PKGS.	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS	COMMODITY CODE NO.	★	WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
		TOFC PLAN NO.						

DESTINATION AGENT'S FREIGHT BILL NO.

Outbound Junction Agent Will Show Junction Stamps in Space and Order Provided. Additional Junction Stamps and all Yard Stamps to Be Placed on Back Hereof.

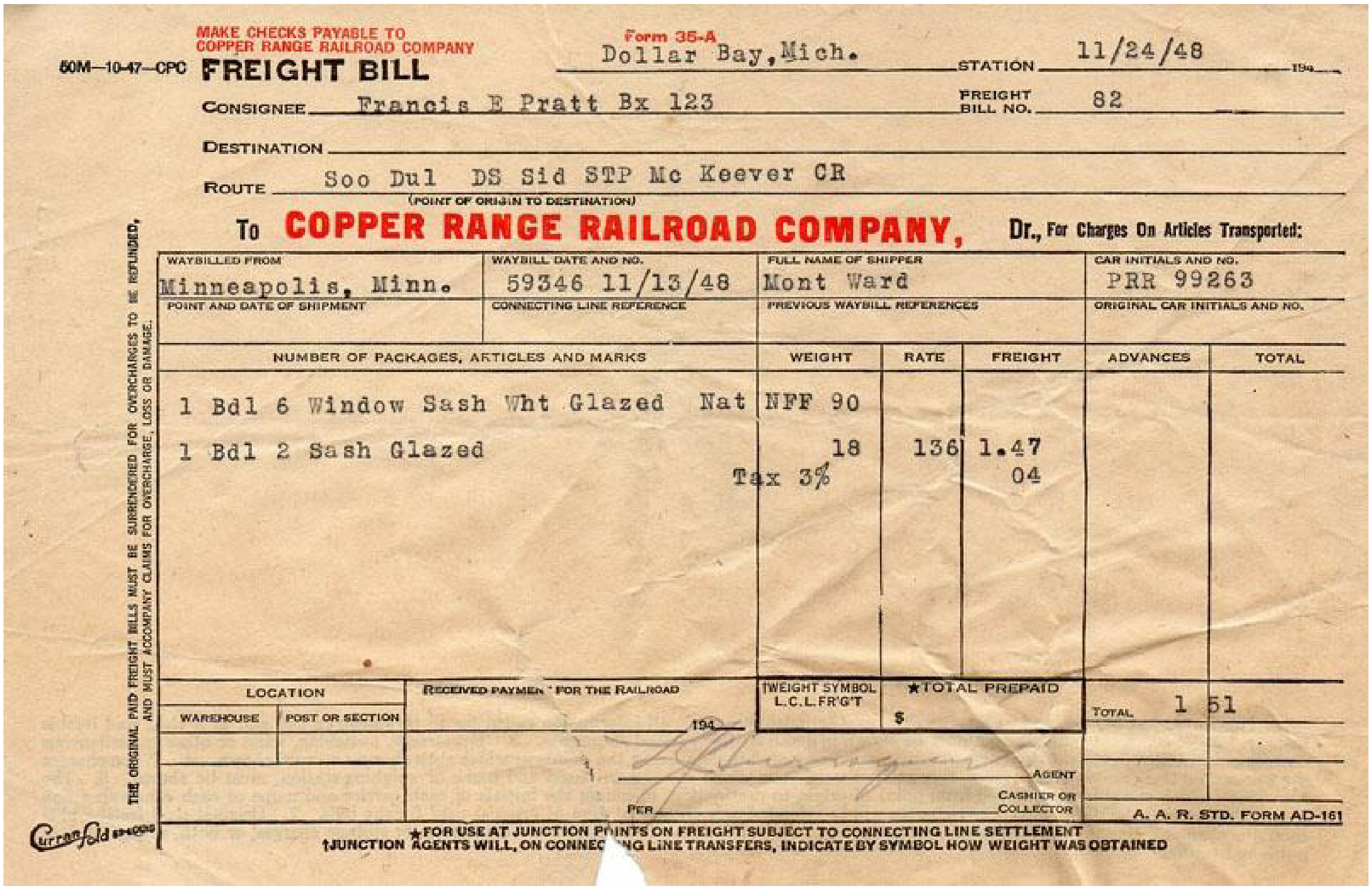
FIRST JUNCTION | SECOND JUNCTION | THIRD JUNCTION | FOURTH JUNCTION

DESTINATION AGENT WILL STAMP HEREIN STATION NAME AND DATE REPORTED

131—CHICAGO AND NORTH WESTERN RAILWAY CO.—131

Waybills differed from railroad to railroad. This is an example of a C&NW bill from the mid 1960's. Compare this bill with the Santa Fe bill on the preceding page. The C&NW bill is newer, and there are some categories for trailer on flatcar shipping. There is more information required about the LCL portions of the freight carried in the trailers on the flatcars.

was. It was also a means of transmitting paperwork from the agent to the train crew if the train was there when the agent was not. Fred said that there were times when he would work at one location, but was the station agent for four other stations. The reason for the date and time on the Empty Car Slip was the demurrage. The clock started running at 7:00 AM on the business day following the delivery of the car. The customer had 48 hours to load or unload the car. The curious thing here is that if the customer only used 24 hours, they got credit for the



MAKE CHECKS PAYABLE TO COPPER RANGE RAILROAD COMPANY

Form 35-A

50M—10-47—CPC FREIGHT BILL

Dollar Bay, Mich. STATION 11/24/48 194

CONSIGNEE Francis E Pratt Bx 123 FREIGHT BILL NO. 82

DESTINATION

ROUTE Soo Dul DS Sid STP Mc Keever CR (POINT OF ORIGIN TO DESTINATION)

To COPPER RANGE RAILROAD COMPANY, Dr., For Charges On Articles Transported:

WAYBILLED FROM	WAYBILL DATE AND NO.	FULL NAME OF SHIPPER	CAR INITIALS AND NO.
Minneapolis, Minn.	59346 11/13/48	Mont Ward	PRR 99263
POINT AND DATE OF SHIPMENT	CONNECTING LINE REFERENCE	PREVIOUS WAYBILL REFERENCES	ORIGINAL CAR INITIALS AND NO.

NUMBER OF PACKAGES, ARTICLES AND MARKS	WEIGHT	RATE	FREIGHT	ADVANCES	TOTAL
1 Bdl 6 Window Sash Wht Glazed Nat	NFF 90				
1 Bdl 2 Sash Glazed	18	136	1.47		
Tax 3%			04		

LOCATION — WAREHOUSE — POST OR SECTION

RECEIVED PAYMENT FOR THE RAILROAD 194

†WEIGHT SYMBOL L.C.L. FR'G'T

★TOTAL PREPAID $

TOTAL 1 51

PER AGENT CASHIER OR COLLECTOR

A. A. R. STD. FORM AD-161

THE ORIGINAL PAID FREIGHT BILLS MUST BE SURRENDERED FOR OVERCHARGES TO BE REFUNDED, AND MUST ACCOMPANY CLAIMS FOR OVERCHARGE, LOSS OR DAMAGE.

★FOR USE AT JUNCTION POINTS ON FREIGHT SUBJECT TO CONNECTING LINE SETTLEMENT
†JUNCTION AGENTS WILL, ON CONNECTING LINE TRANSFERS, INDICATE BY SYMBOL HOW WEIGHT WAS OBTAINED

This is a freight bill for goods shipped to Francis E. Pratt in Dollar Bay, Michigan from Montgomery Wards in Minneapolis. The routing of the car was SOO Line from Minneapolis to Duluth. At Duluth, the SOO Line handed the car over to the DSS&A. They took the car to Sidnaw, and handed it off to the CMStP&P. They took the car to McKeever, and handed it off to the Copper Range. The Copper Range delivered the car to Dollar Bay. This is a Less Than Car Load (LCL) shipment, and was sent freight collect. The items were unloaded at the Dollar Bay depot, and kept in the freight room for Francis Pratt to pick up. The station agent would collect the freight charges due. This form would then be used by the accounting department to balance accounts with all the other railroads who handled the car.

unused 24 hours that they could then apply to the next car.

At this point, the shipper had his car, and there was a way to get the paperwork handed off between Fred and the train crews. When the customer was ready to ship the car, they contacted Fred. At this point, the shipper made out a Bill of Lading. This is an accounting document that has the originating location, destination, car contents, and freight rate listed on it. There are three copies of the bill – the original, the shipping order, and the memorandum. The shipper would keep the original and the memorandum, and the station agent got the shipping order. Fred worked up a rate for them based on standard routing. The shipper could request special routing if they liked, but that needed be approved by the traffic department. At this point, the accounting department had the paperwork to bill the shipper or the consignee. The station agent could collect the freight charges at the station, or the railroad would bill the customer. Now the car was ready to move.

The shipper notified Fred when the Bill of Lading was done, and the car was ready to ship. Fred made out a waybill that showed the car reporting marks, originating location, receiving location, car contents, car weight, and other information as required. The waybill was what told the people on the railroad what to do with the car. Fred then called the station in advance of Oostburg to let them know that a loaded car was ready to ship in Oostburg. Note that it was not necessary to call a terminal to pick up a car. If the shipper called Fred in the morning to say they were ready, Fred would call the stations on each side of him. If the local freight was working its way towards Oosburg, the crew of the local would be notified that there was a car ready in Oostburg, and it could get picked up the same day. If the car was not picked up the same day, the next local train would pick up the car. The car would be taken to the next yard, and then start moving in the direction of its destination. In this case, it was easier for the north bound local to pick the car up than a south bound local, so the car would go to Sheboygan first. The waybill now traveled with the car, and directed each train crew and yard master where to send the car. At the end of each run, the train crew turned in the waybills. When the next crew came on duty, they would check the cars in the train against the waybills to make sure everything matched. When that train crew gave up the train, the waybills stayed with the train. The next train crew did the same thing until the car reached its final destination.

It's the waybill part of the process that we usually simulate on our layouts. We can use waybills to direct the movements of cars on our layouts just like the railroads do. There are a number of ways this is done, and next we will visit with Ted Schnepf to see how one of those ways works. In addition, we will get some information from Ted on how to design this process for use on a new or existing layout.

Model Operations

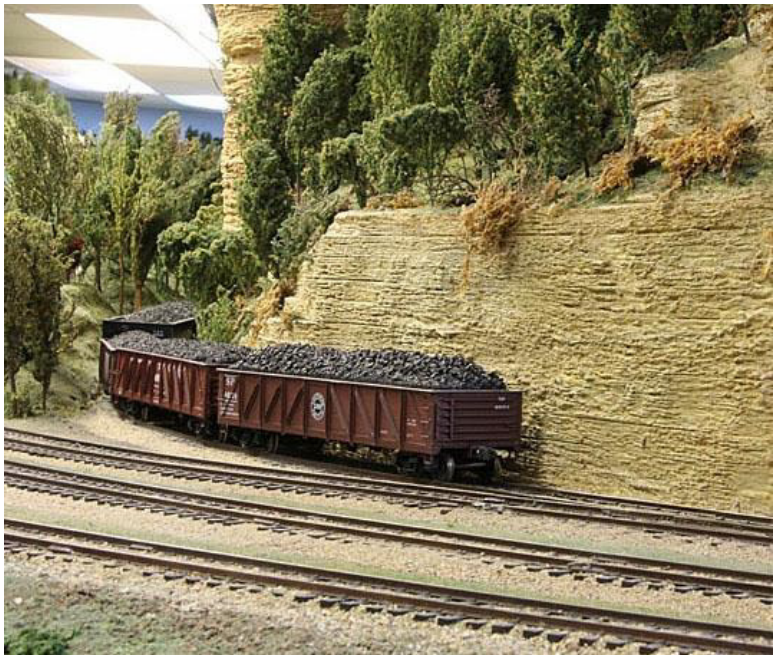
On Ted Schnepf's Layout

By Glenn Guerra

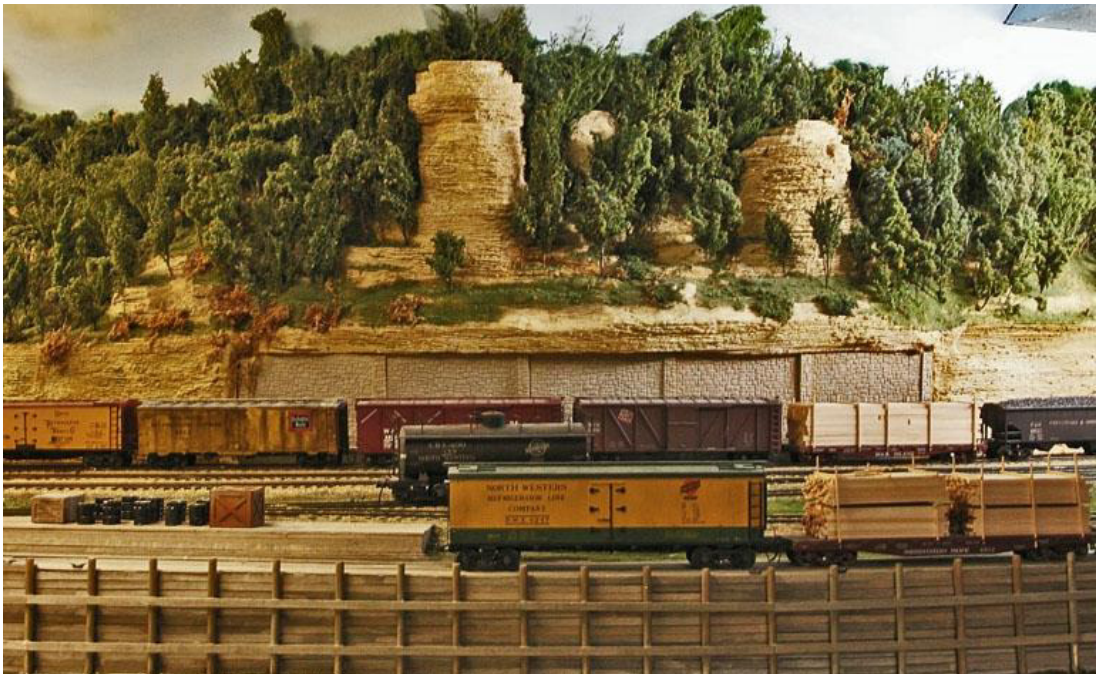
Photos by Dan Dawdy

After talking with Fred Steffen about how the railroads get cars where they are going, we went to see Ted Schnepf. Ted has an O Scale layout in his home that features a lot of prototype operation. The layout is very large, and operates much like a real railroad. The size and scope of this operation may seem overwhelming, but don't let that scare you away. Ted has some very basic points to help you develop an operation for any size layout.

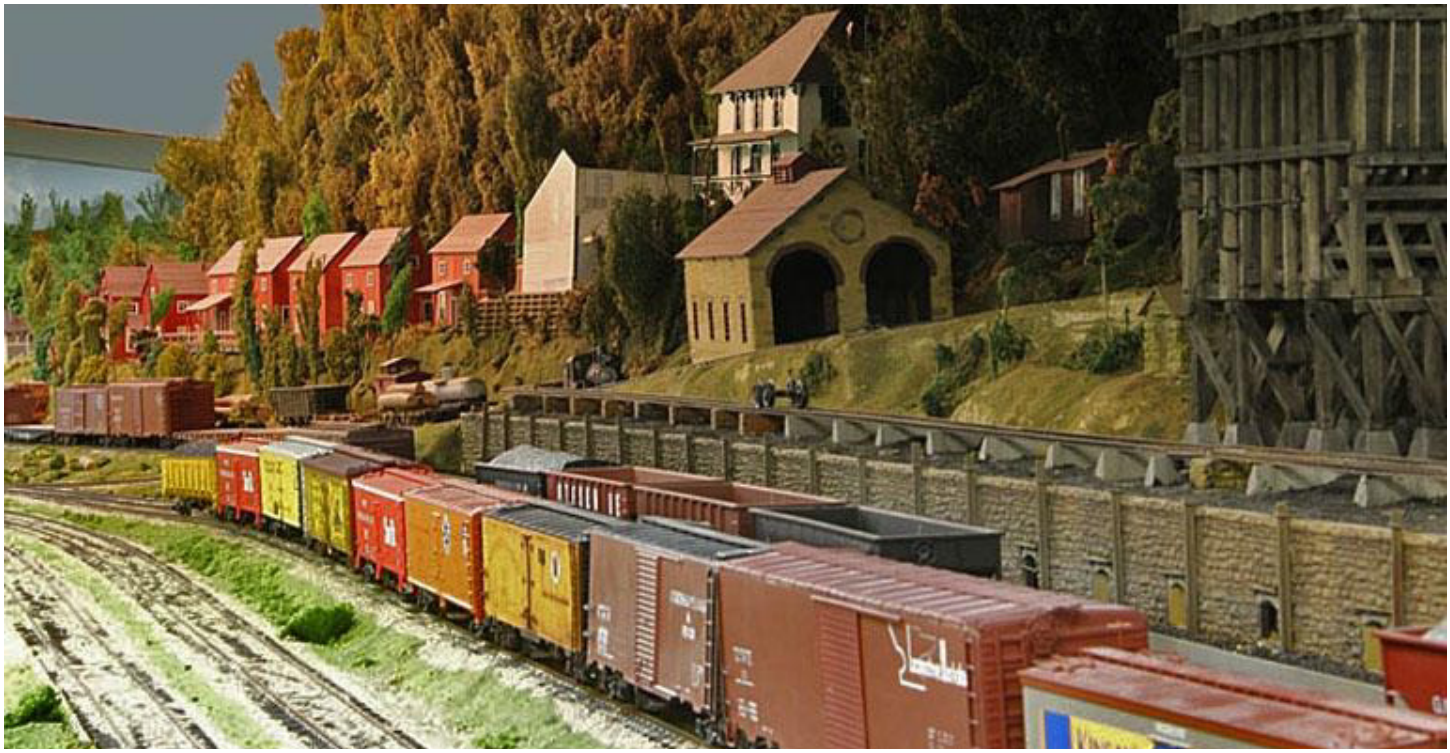
We asked Ted when he started planning this layout and the operations. He told us that while working as a civil engineer on the Milwaukee Road, he was already starting to form ideas of a dream layout. Ted told us he was inspired by the principles of model railroad operation presented by John Armstrong in the 1960's, and started to think about what he would like to do. This dream layout would be a single track railroad with passing sidings, and at least one terminal. The operation of a single track railroad would be more interesting with the meets at sidings. The terminal would have multiple lines coming into it providing some variety in the operation and car types. Ted also wanted the railroad to have a moderate amount of freight traffic with some colorful cars. The final consideration for traffic was to have a few passenger trains. Location was considered for



Some gondolas of coal are sitting on a siding south of the South Marquette yard. The limestone bluffs are typical of the scenery around the Mississippi River valley. This was one of the features Ted wanted on his layout.



These bluffs south of Marquette along the river are typical of the scenery in the area. The waterfront in the foreground was for loading river barges. This was one of the things that Ted considered when choosing an area to model.



The town of Sewell on Ted's layout is inspired by the West Virginia town of Sewell. The coke ovens are to the right, with the coal supply bunker above them. The stone engine house belongs to the narrow gauge line that ends at Sewell. The foreman's house is the big white one on the hillside, and the company store is right in front of his house. The small houses in the background are company houses for the workers. The box and refrigerator cars are waiting for pickup by a through train.

scenery, and Ted liked the rolling hills around the Mississippi River where he spent some time working for the Milwaukee. Ted's work with the railroad took him to most all parts of the Milwaukee Road, and the area around Marquette, Iowa was starting to fit the bill for his layout. The hills are covered with hardwood trees that turn color in the fall, and Marquette is the crossing point for two main lines. In addition, once you are out of Marquette, there are branch lines off both main lines. The last bonus was that the grade going westbound out of Marquette could require helpers which would add to the operation. This dream layout is coming together now in Ted's basement. Ted corresponded with John Armstrong, and John was able to visit Ted's layout before he passed away, which was a special visit for Ted.

Now that Ted had a location and some potential traffic, it was time to think about the equipment. Ted wanted to model the 1954 timeframe as much as he could. In addition, he wanted to model the early fall because the train traffic would be heavy. In the fall, grain harvests use up all the available

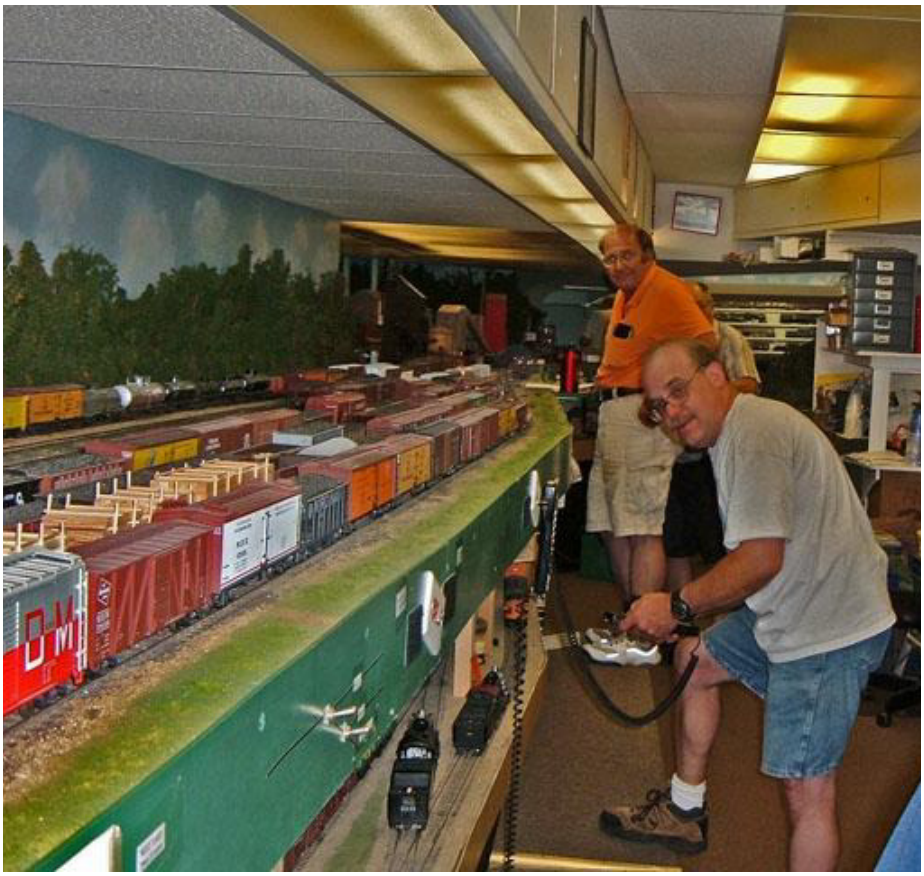
Ted made this list of trains for a typical 24 hour day on his railroad. The schedule is a big help to the terminal yard people because it gives them some idea of what trains to expect.

MILWAUKEE ROAD DUBUQUE - IOWA & DAKOTA DIVISIONS TRAIN SHEET

TRAIN	DIR	CALL	LOCATION	TRAIN DESCRIPTION	DESTINATION
#69	WB	1:15A	SAVANNA	DRAG FREIGHT	MASON CITY
#163	WB	1:35A	NAHANT	OIL TRAIN	LA CRESCENT
#62	EB	1:55A	MASON CITY	SIOUX FALLS MEAT	SAVANNA
#95	WB	2:20A	MADISON	DRAG FREIGHT	MARQUETTE-W
#176	EB	5:30A	LA CRESCENT	DRAG FREIGHT	NAHANT
#96	EB	6:20A	MARQ-W	DRAG FREIGHT	MADISON
#368	EB	7:50A	WAUKON	MIXED	MARQUETTE-W
#35	WB	8:40A	SAVANNA	PASSENGER	LA CRESCENT
#4	EB	9:00A	MASON CITY	MILK TRAIN	SAVANNA
#11	WB	9:50A	MADISON	PSGR- The SIOUX	MASON CITY
#75	WB	11:15A	SAVANNA	DRAG FREIGHT	MARQUETTE-W
#369	WB	11:20A	MARQ-W	MIXED	WAUKON
#166	EB	11:30A	LA CRESCENT	TIME FREIGHT	SAVANNA
#167	WB	12:30P	SAVANNA	TIME FREIGHT	LA CRESCENT
#68	EB	3:01P	AUSTIN	AUSTIN MEAT	SAVANNA
#61	WB	3:05P	MADISON	AUTO TRAIN	MARQUETTE-W
#81	WB	4:30P	NAHANT	DRAG FREIGHT	MARQUETTE-W
#64	EB	5:00P	MARQ-W	AUTO TRAIN	MADISON
#338	EB	6:00P	WAUKON	MIXED	MARQUETTE-W
#12	EB	7:00P	MASON CITY	PSGR- The SIOUX	MADISON
#38	EB	7:20P	LA CRESCENT	PASSENGER	SAVANNA
#161	WB	7:40P	SAVANNA	DRAG FREIGHT	LA CRESCENT
#303	WB	7:50P	MARQ-W	MIXED	WAUKON
#164	EB	8:15P	LACRESCENT	TIME FREIGHT	SAVANNA
#761	WB	9:45P	MARQ-W	AUSTIN FREIGHT	AUSTIN
#63	WB	10:15P	MARQ-W	SIOUX FALLS FREIGHT	MASON CITY
#3	WB	10:30P	SAVANNA	MILK TRAIN	MASON CITY
#70	EB	10:55P	AUSTIN	AUSTIN MEAT	SAVANNA
#231	WB	EXTRA	DUBUQUE	DUB. DIV. COAL TURN	SPECHTS FERRY
#230	EB	EXTRA	SPECHTS	DUB. DIV. COAL TURN	DUBUQUE
#232	EB	EXTRA	CALMAR	I&D DIV. COAL TURN	SPECHTS FERRY
#233	WB	EXTRA	SPECHTS	I&D DIV. COAL TURN	CALMAR
#234	EB	EXTRA	LA CRESCENT	L&R DIV. COAL TURN	SPECHTS FERRY
#235	WB	EXTRA	SPECHTS	L&R DIV. COAL TURN	LA CRESCENT
#237	WB	EXTRA	SPECHTS	OSSIAN COAL TURN	OSSIAN
#236	EB	EXTRA	OSSIAN	OSSIAN COAL TURN	SPECHTS FERRY
#33	WB	EXTRA	DUBUQUE	BANANAS	MASON CITY
#91	WB	4:30A	MARQ-W	WAY FREIGHT-OSSIAN	CALMAR
#92	EB	1:30P	CALMAR	WAY FREIGHT-OSSIAN	MARQUETTE-W
#94	EB	EXTRA	MARQ-W	EDMORE PATROL	EDMORE
#93	WB	EXTRA	EDMORE	EDMORE PATROL	MARQUETTE-W
#98	EB	EXTRA	MARQ-W	SHORT PATROL	TURKEY RIVER
#97	WB	EXTRA	TURKEY RIVER	SHORT PATROL	MARQUETTE-W
#203	WB	EXTRA	MARQ-W	WATERVILLE PATROL	WATERVILLE
#202	EB	EXTRA	WATERVILLE	WATERVILLE PATROL	MARQUETTE-W
#241	WB	EXTRA	SAVANNA	DRAG FREIGHT	MARQUETTE-W
#242	EB	EXTRA	MARQ-S	DRAG FREIGHT	SAVANNA
#243	WB	EXTRA	NAHNAT	DRAG FREIGHT	MARQUETTE-W
#244	EB	EXTRA	MARQ-S	DRAG FREIGHT	NAHANT
#246	EB	EXTRA	LA CRESCENT	DRAG FREIGHT	DUBUQUE
#249	WB	EXTRA	MARQ-W	DRAG FREIGHT	MASON CITY
#248	EB	EXTRA	MASON CITY	DRAG FREIGHT	MARQ-S

box cars. The seasonal use of some of the box cars also means that some older cars are still being used. There are a lot of refrigerator cars going through the area full of mostly meat, can goods, and dairy products; and the colorful refrigerator cars would look good in the train. In his research, he found that the Illinois Central brought bananas up from New Orleans to Dubuque, handing the cars off to the Milwaukee to forward. This added more refrigerator cars to the trains. In this same timeframe, the Milwaukee Road was receiving tank cars of petroleum products in Kansas City and hauling them north, mostly to north and west of Marquette. There are many stone quarries in the area, and they provide hopper, gondola, and box car loading. Manufacturing is also present, both metal and wood. Lastly, is the coal traffic. Ted is the co-author of a book about the coal operations around Sewell, West Virginia, and he wanted to model some of it. So, with

Tim Bernaden checks out his nephew on the throttles while Ted does some paperwork.



Russ Pohlman is plugging in and getting his engine. Russ is from Moline, Illinois, and brings his own engine when he comes to Ted's to operate. Today, Russ will be working the Dubuque interchange yards. Steve Karlson will be working the Marquette yard, and is surveying the situation.

some artistic license, he put the mines and coke ovens in the Mississippi River valley. No problem, it gave him a lot of coal traffic to model. Ted uses a lot of gondolas in this service which is common to the Midwest. There is even a small iron mine that actually existed in the area. Now he had all the industry and traffic to use most any type of car you would see on the railroad in 1954. The next item on Ted's list was to look at the prototype train operation on the Milwaukee Road at the time.

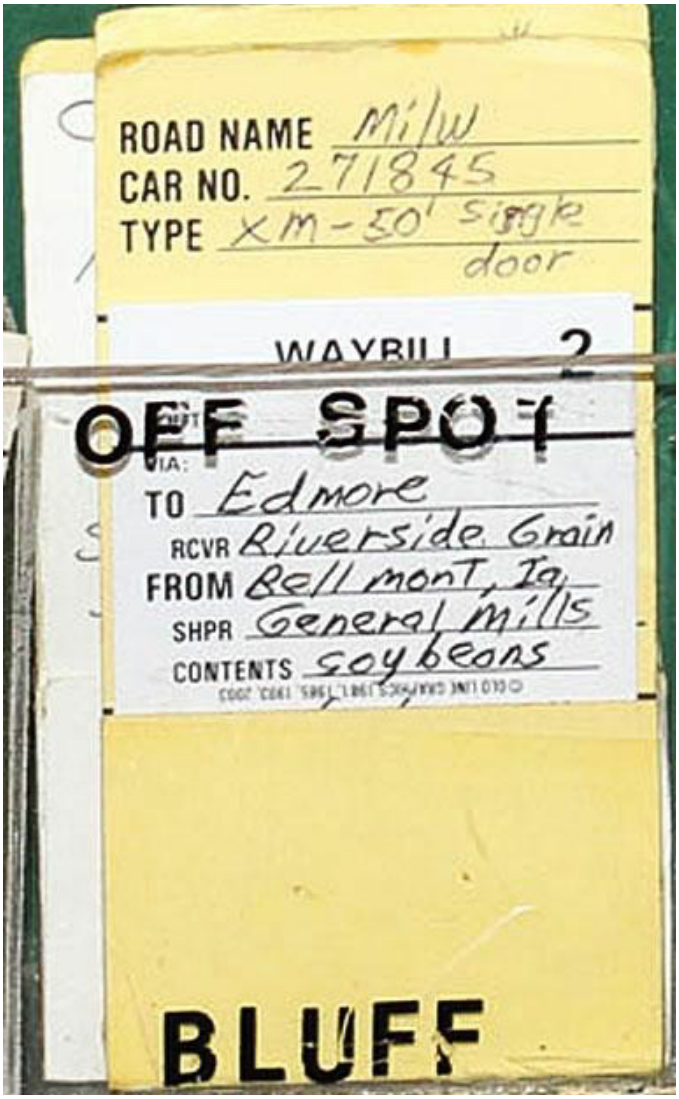
Ted said he looked at employee timetables from the locale and era. These are fairly common at railroadiana shows, and historical societies are also a valuable resource. Checking timetables from the era he was modeling, Ted found that there were six scheduled trains each way passing through Marquette. Add in the locals and extras, and you start to have a lot of traffic and car routing possibilities. Ted developed all this traffic into a 24 hour schedule, and we

have reprinted that elsewhere in this article. Now he had train movements that could take or bring cars places, but what were those places?

Ted made trips to towns he wanted to model collecting photos, as well as, taking many himself. In addition, Ted looked at Sanborn fire maps when he could find them. These are a good resource for track and building locations. The fire maps are for insurance providers to assess risk. Local plat maps from communities are also helpful, and they can be found in almost any town library or history center.

Now it's time to think about the customers on the lines. Ted loads the towns up with customers as they existed in the 1950's. When planning operations, you need to match customers to car type. The idea here is to have an origin and destination for each car, even if one of those points is off the layout in a staging location. Shippers lists from the railroad can usually be provided by historical societies, or reprints are available through some dealers. These would list all the shippers and customers in an area. At this point, Ted now has a place for every car to go, and a car for every place.

The next step is to route the cars. Fred Steffen told us about waybills, and how they travel with the cars. Ted uses a system of simulated waybills to control the movement of cars on the layout. On his layout, Ted created a simplified waybill that travels with the cars on the layout. Ted explained the card routing system he uses



This is a typical waybill on Ted's layout. The car information is at the top of the card. The waybill is the white card in the pouch. You can see where the car is going, where it came from, and what is in it. The waybill can be turned over or flipped to show different locations and routings.

Bill and Rick are working the Hawkeye Grain elevator on the Mississippi River south of Marquette.

for this task. There is a card for each car on the layout. This card has the reporting marks, car number and type of car. These cards have a pouch on them that contains the waybill. Ted made the waybills so only one half of one side will show at a time when they are in the pouch. The part that shows has the destination of the car on it. The railroad routes the car to the town first, and then the industry, so that is how Ted did his cards. The card has the originating town and shipper, along with the contents of the car, just like the prototype waybills. Because only one half of one side shows in the pouch, the waybill can be turned over or rotated to show a total of four destinations. To keep

We are at Spechs Ferry. Dick Koch is running his westbound train up Monona hill towards Beulah, Iowa. Bill Navagato is working the yard at Spechs Ferry getting coal loads sorted out for pick up. Bill knows which trains will be coming next, and he is getting cars ready for them. Bill has an HO layout at home, and is part of the operating round robin that Ted belongs to. One of the interesting things about DCC is that Bill can bring his own throttle to Ted's house when operating there.

things interesting, Ted will change these bills after the fourth destination is used so the same car does not go through the same cycle for years at a time. To do this, all you need to do is swap the waybills from one car to another. If cars go to staging, they are billed to the staging yard where they stop.

At this point, you have developed a general idea of your railroad, the surrounding countryside, the traffic potential, schedule of trains, types of cars, and a way of controlling their movement. The last step is to incorporate these ideas into a track plan, but that is another topic. For now, let's go through an operating session on Ted's layout to see how it works.

You pick your train up at its originating location, and get a train card

These are the waybill bins that Bill is using at Spechs Ferry on the outbound yard. Each track has a bin, and Bill will use a bin for each train that will be coming soon. The waybills tell Bill which train to sort the cars for. When the train gets there, it will pick up the cars Bill has waiting for it.

These are the inbound bins at Spechs Ferry. There are five tracks for the coal mine. Each track is a location, and is marked on the waybill. The cars are usually spotted by the delivering crew, and the waybills are placed in the corresponding bin.

that tells you what you are going to do. Your train is the next train on the list. The reason you take the next train is because the terminal operators at Dubuque and Marquette are expecting the trains in order. This is important because they will be getting your pickups ready for when you get there. Remember that some trains are through trains, and only stop at some locations, but they do make set outs and pick ups at these locations. One thing to look at is what the instructions for your train are. If you are a through freight, you need to make sure your cars are blocked as groups. Then, when you get to the set out location, you can cut the whole intermediate group off and/or pick a destination group, and be on your way. I was tagging along with John and Bart while they worked #68, the eastbound from Austin, Minnesota, to Savanna, Illinois, passing through Marquette. There are a lot of refrigerator cars in this train.

At Marquette, Steve Karlson has a bin for each track like Bill Navagato does at Spechs Ferry. Steve will use available tracks to build up cuts of cars for the next train that arrives, and will try to keep a track open so the arriving train has a place to drop cars.

We stopped at Calmar to block our train. There were cars for Edmore, so I blocked them at the front of the train not realizing that we were a through train, and would not stop at Edmore. *(What a ding dong, guess I should have read the train card.)* Instead, we went through Edmore to Marquette, and dropped the cars off at Marquette. The local then took the cars back to Edmore. On the way to Edmore, we stopped at Ossion, and set some cars on the pass track for the next local to spot. We moved on to Marquette, and dropped the cars for Edmore with the yardmaster. The yard job switched the cars out while we went to service the engine. We picked up what was left of our train, all refrigerator cars by now, and headed to the South Marquette yard ice dock to ice the refrigerator cars. While the cars were being iced, we picked up some cars to fill the train out, picked up the refrigerator cars, and made up the air. After doing a brake test, we were on our way to Savanna, a staging point on Ted's railroad.

When you get to the location where you will set out some cars, you refer to your waybills. The waybill will tell you what to set out, and where to spot the car. When you set cars out, you leave the waybills with the cars at the town. At each town, Ted has a group of bins for the waybills. When you spot cars at the customers, you place the waybills in the set out bin. The cars you need to pick up are in the pick up bin. When your work is finished, you move on. Before the next session, Ted goes to each bin location, and changes some of the waybills based on industry needs. To do this, he takes the bill out, rotates it, and sticks it back into the pouch. Now a new location shows. The waybills are then put in the pick up bin for the next train that stops at that location. There are two more bins I should talk about. Ted has bins for off spot and hold. If you are delivering cars to an industry, and there is no room for them, you spot them in a convenient location, and place the waybill in the off spot bin. If the customer is not finished loading or unloading the car, Ted will place the waybills into the hold bin when he stages the layout for the next session. This adds some additional features to the operation, and will hold the car until it is ready to move. When a car is in the hold bin, you cannot remove it from the customer,

There is more coming, and Ted is adding onto the layout. This view looks into the original part of the layout. On the right is Calmar. The view is looking toward Marquette, and the next town will be Ossian. On the left, the bottom track comes from Savanna staging and goes to Dubuque, which is to the right below us. The next track up with the water tank is located at Reno, on the line to La Crescent, Minnesota. The top level comes from Mason City and Ahston staging, going to Calmar. There are still two more levels to be added to the wall.

Here I am at Calmar showing the visitors what to do. This is where I blocked the Edmore cars at the front of the train, and we had two extra moves at Marquette because of that. Shows you what I know. Well, it all worked out OK anyway.

and will need to spot your delivery in an off spot location until the hold car can leave, thus making room on the siding. The next train that is working the area will look at the off spot waybills to see if the cars can be spotted at the customer. If so, the waybill goes into the set out bin. Ted will change the routing on the cars in the hold bin when he stages the railroad, and he will move the card to the pick up bin for the next train that is working the area.

This may seem like work, and a task that many would not like to tackle, but there are a lot of good points to this system. Ted has modeled a large area with lots of traffic and customers. The way the whole system was developed is the important thing, and those same principles can be applied to any layout. The first principle is to determine a location or theme for your railroad. Then, determine the number of trains coming through or operating out of your area, and try to develop a 24 hour schedule of those movements. Think of the type of freight being shipped, along with where it is going. This will help you determine the car types you will be using. These last two steps go hand in hand, so they need to be thought of together, not as one before the other. If you have a favorite type of car, you can create customers to use that car. Lastly, route the freight. If you do these things in this order, you can develop some operation for any layout. You could model a single industry as a layout and still make this approach work.

Part of the new extension on Ted's layout. This view looks toward Dubuque. The IC and the CB&Q cross on a lift out section in front of us. The tracks continue to the Dubuque interchange yards. Behind the divider on the left, is the Milwaukee Road Dubuque yards. On the left, you can see Ted's plans.

For example, let's say you wanted to model just a steel mill. Your mill has its own railroad. Now we have some idea of a location and potential operation. The next step is to schedule the trains. We would have a pick up and delivery for the mill. These trains would most likely come from staging. The trains would be picking up and setting out blocks of cars for the mill. Next, we would need to switch the cars around the mill as that is what our mill railroad does. The blast furnace needs to be charged on a regular basis. This would require ore, coke, scrap, and limestone. These would need to be put in the furnace in the correct order, so now we have switch moves with loads in and empties out. The furnace runs continuously, and gets tapped regularly. A train needs to be there with the ladle cars. Now we have two movements going at the same time. A third movement is spotting empty cars for loading, and gathering loaded cars from the mill buildings. You know that the connecting railroad switches to your location twice a day, so you need to have cars ready for pick up. We can do these tasks one at a time ourselves or all together. This could keep five operators busy at the same time. So now we have developed a list

of train movements. Next, we look at car types. We have hopper cars of coal if we coke our own coal, or coke cars if we buy coke. If we have a coking operation with the mill, we have chemicals produced. That would mean we need some tank cars. We have lots of gondolas for rolled product out and scrap in. Lastly, we need hot ladle cars. At this point, we have the general theme and location of our railroad, some idea of the movements on the railroad, and what cars we would need. Now it is time to think of the customers. Since we are modeling a single industry, the customers are locations around the industry. The coal coming in goes to the coke works, or to the unloading area for the blast furnace. Empties go back. The same for the limestone, scrap, and ore. The ladle cars go back and forth from the blast furnace to the rolling mill. The gondolas go to different rolling mills, and those are different door locations. The scrap goes to the scrap pile to be used in the melt furnace. So, Ted's principles can be applied to any size railroad if you would like to have an operating scheme.

Ted is very interested in operation, and is involved with an informal group of other modelers that all share the same interest. They go to each other's layouts to operate, and are always coming up with good ideas. By the way, most of the people in Ted's group are not O Scale Modelers. One last point Ted made was, you do not need to start from the beginning to have an operation. If you have a layout already, and would like to create some operation for it, start with listing your industries, and go from there. Once you have determined your cars and customers, your train schedules will naturally follow. Then, route the cars for their movement.

When I lived in Illinois, my nine year old nephew (an airline pilot today, how time flies) and I would go to Ted's house on a regular basis to work on the layout. I started learning some of the operation, and have come to like it. Ted is always willing to talk about operation, so don't be afraid to ask him when you see him. We took some photos of an operating session at Ted's layout for you to see with this article. We had a good time that day, and want to thank Ted for taking the time to explain some of this to us.

Ted, you have quite the empire going, and John Armstrong would be happy to see what you are doing.