

## Building A Circus Train In S Gauge

The 3rd section of Ringling Bros. Barnum & Bailey Circus Train arriving at Montpelier Jct., Vt., behind a brace of 2-8-0's. Unloaded flat cars of previous section can be seen in foreground. This was back in 1955 on the Central Vermont Railroad.

Our author, an excellent craftsman with a fine imagination and ingenuity for improvising, tells us how he built his Royal Circus, an outstanding accomplishment in a gauge where many parts and supplies are just beginning to become available. Whether you intend to build a circus train for yourself or not is of little consequence, but the methods and materials that Bill uses will impart some knowledge of how he availed himself of anything useable within his daily range. The fellow who develops this instinct for scrounging, or substituting, will tackle any model with complete confidence and assurance. Just as in converting one model into another, this searching and substituting of available articles for the item you need can be an exciting, stimulating, and very rewarding phase of model railroading in S gauge.

By Bill Boucher

(PART I)

Remember how it was, "down at the yards", on circus day? The great steel flatcars holding canvas covered wagons, the brightly painted stock cars and wood-sheathed, transom-windowed sleepers, all gleaming in the summer sun, while soft coal smoke from the switch engines swirled momentarily around them before losing itself in the morning ground haze. Remember the clop of the horses' hooves on the cobblestones between the team tracks, the soft moan of an engine whistle as her hogger answered a switchman's signal, and the roar of unmuffled chain-driven Mack "Bulldog" trucks as they headed for the lot with two or three heavily loaded wagons in tow?

But alas, like the steam locomotives that pulled them, and the open trolley cars that brought their customers to the show grounds on the edge of town, the tented railroad circus has become extinct. A few carnivals, and an abbreviated Ringling Bros.-Barnum & Bailey train of "tunnel" cars are all that remain of a chapter of railroad history that in 1910 saw no less than 38 railroad circuses tramping on upwards of 675 cars!

I had long wanted such a train in "S" gauge, but the complete lack of even basic parts for circus equipment in 3/16 scale stopped me. However, after seeing some of the beautiful scratch-built work done by "O" & "HO" gaugers, I decided I just had to have something, and the "Royal 'S' Circus" is the result.

I will not try here to describe the con-

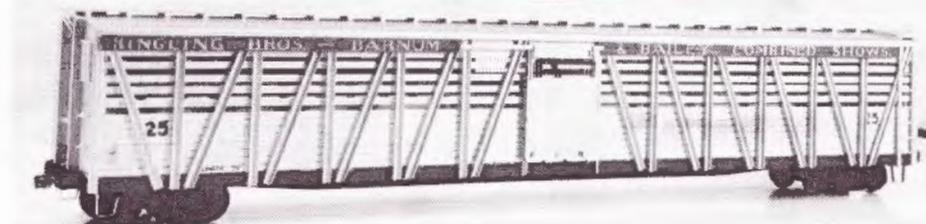
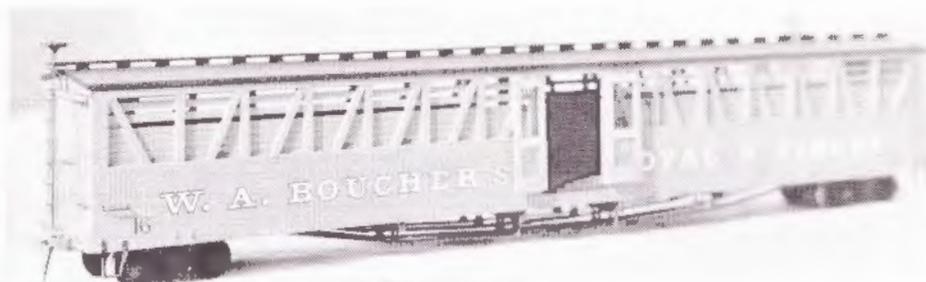
struction in detail, nor are the accompanying drawings necessarily exact copies of specific prototypes. What I will attempt to show is that anyone with no more than five thumbs on each hand, plus a degree of imagination, can combine Northeastern's wood parts with some of the stuff intended for other scales, as well as unlikely odds and ends, to come up with a good-looking show train which looks "right", and which can easily become a feature attraction on your pike.

First of all, decide on the size of the train your layout can handle. A 30-car show makes an imposing display from the circus modeler's point of view, especially when the equipment is all unpacked and set up. But it's out of the question for the average model railroader. Fortunately for us, there were many circuses in the 'teens and twenties that travelled on ten cars. A train of this size is ideal, as it will not be overly long for your main line blocks, nor tax the yard storage capacity. If you should desire more cars, two 10 car trains could be run as two sections. This should make quite a spectacle. Still, it'll look pretty impressive; over twelve feet long including engine and caboose. Make-up of a typical ten-car circus is given here to illustrate what's required, and how much of each. 10 Car Show - 6 flatcars, 2 stock cars, 2 sleepers.

### First Flat carries:

- 12' steam boiler wagon
- 16' cookhouse wagon
- 14' baggage horse tent wagon
- 18' menagerie canvas and pole wagon

TRUSS FRAMED WOOD STOCK CAR, SIMILAR TO CAR SHOWN IN PLANS, HAULED CHRISTY BROS. HORSES IN THE 1920's. RB AND B & B CAR #25 IS A STEEL FRAMED VERSION AND A LATER MODEL.



Second Flat carries:

- 30' Big Top poles and stringers wagon
- 10' Stake and chain wagon
- 16' Big Top canvas wagons (2)

Third Flat carries:

- 16' Electric light generator wagon
- 24' Stringers and jacks wagon
- 12' Seat plank wagons (2)

Fourth Flat carries:

- 16' Sideshow canvas wagon
- 16' Concession wagon
- 12' Property and rigging wagon
- 14' Wardrobe wagon
- 14' Misc. equipment wagon

Fifth Flat carries:

- 10' Water wagon
- 18' Band wagon
- 12' Ticket wagon
- 15' Calliope wagon
- 14' Tableau baggage wagon

Sixth Flat carries:

12' to 16' animal cage wagons (5 or 6)  
One stock car carries 30 baggage horses, the second was divided in the center to carry 5 or 6 elephants, plus 15 performing horses as well as 2 or 3 camels. Half of this car would have slatted sides, the other half would be solid with small windows. The 2 sleepers would be sufficient to carry the personnel.

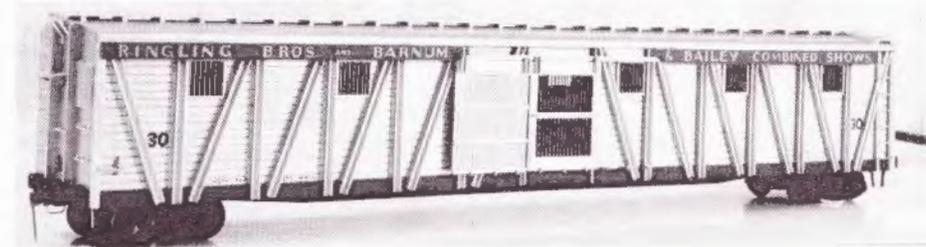
If you decide on a larger show, remember that the total number of cars is usually a multiple of five (10, 15, 20, etc.), with

about half the total being flat cars, and the remainder more or less evenly divided between stock cars and sleepers. (One of the sleepers will be the Advance Advertising Car, which usually preceded the rest of the train into a town by about two weeks).

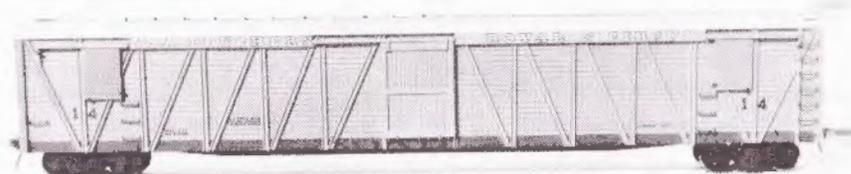
So much for factual background; let's get started on construction.

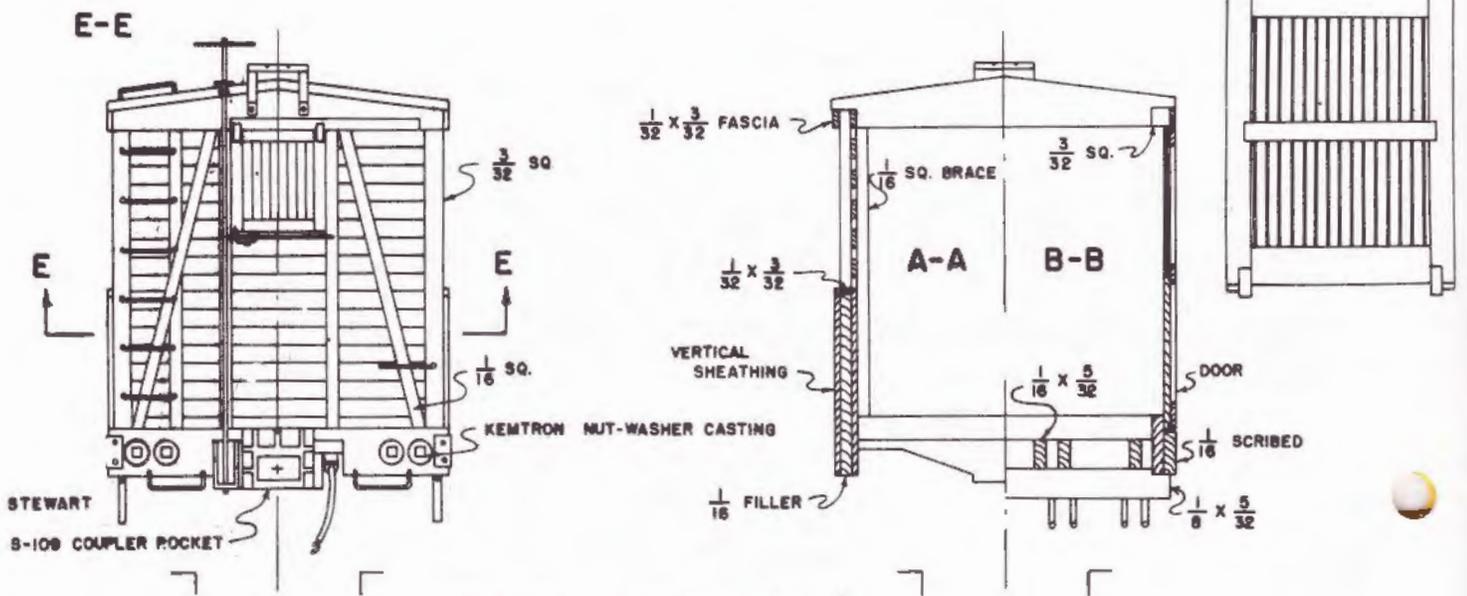
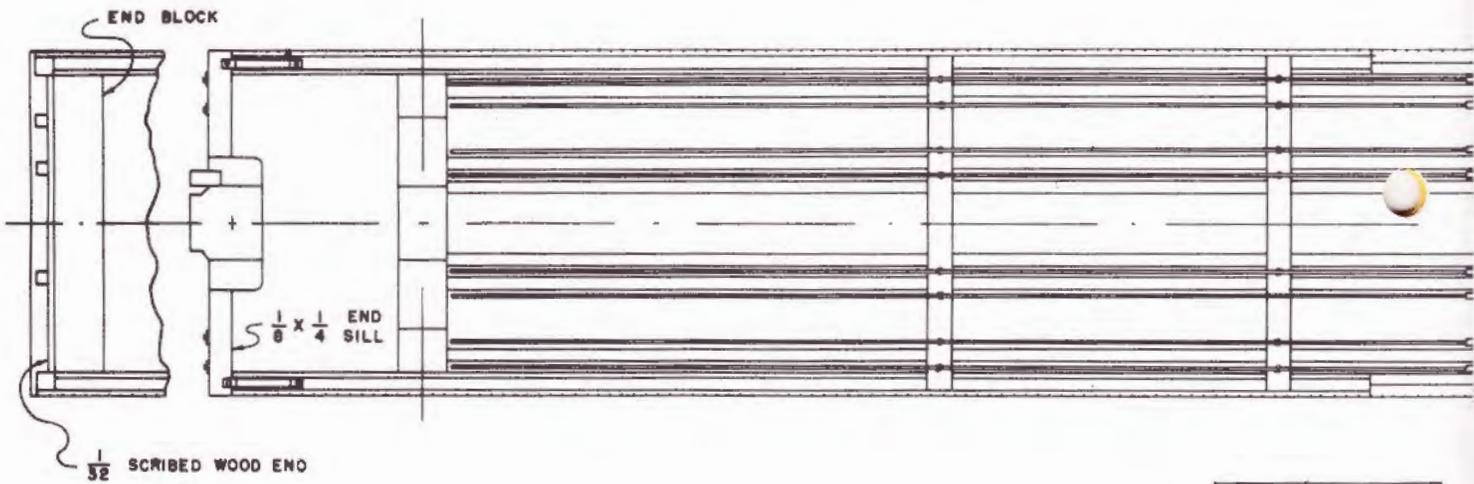
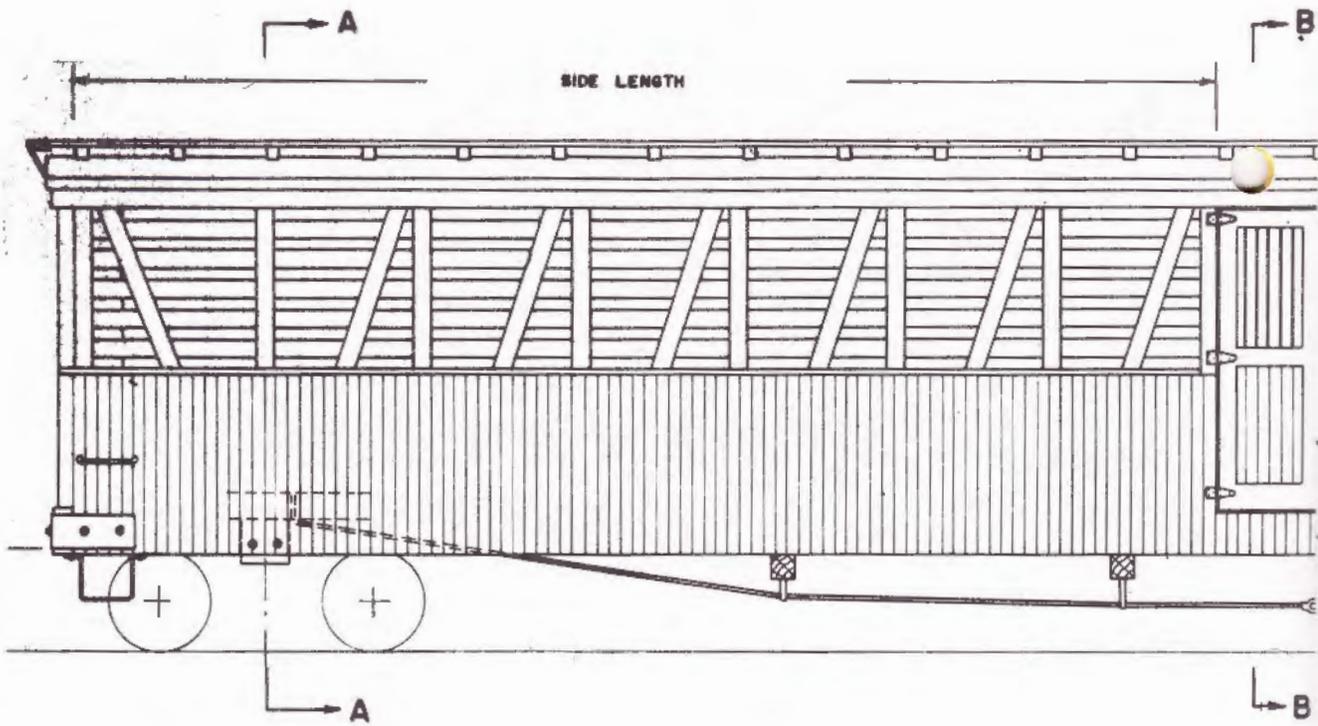
STOCK CARS. Two types are generally used. One has slatted sides similar to regular R.R. stock cars and is used for carrying horses, camels, zebras, etc., while the other has solid sides with small barred windows, the trade-mark of the elephant car (or "Bull" car as it's known to circus folks). The plan shows both types of cars. The left half is based on an older wood-framed car used by the Sells-Floto show in the early twenties, while the right half is the modern steel-framed car as built by the Warren Tank Car Co. for Ringling Bros., Al G. Barnes, and others from the thirties through the end of the railroad era. Either type of car can be built with either type of siding. For circus use, the slats were in the upper left of the sides only. In the case of the older wooden "Bull" cars, the sides were often double-sheathed all the way up to the roof, giving the car an appearance not unlike a regular Maintenance-of-Way bunk car.

General construction is similar to the Ambroid stock cars, or Kinsman or Regal box-cars. Use overhang type roof stock on the

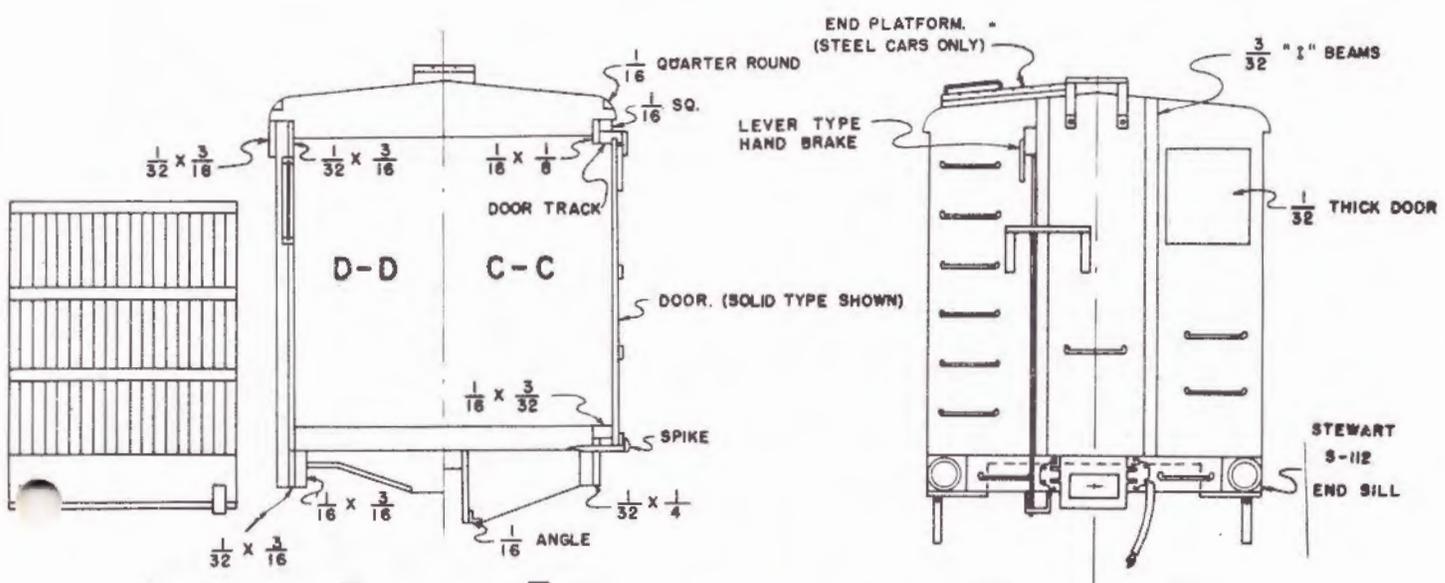
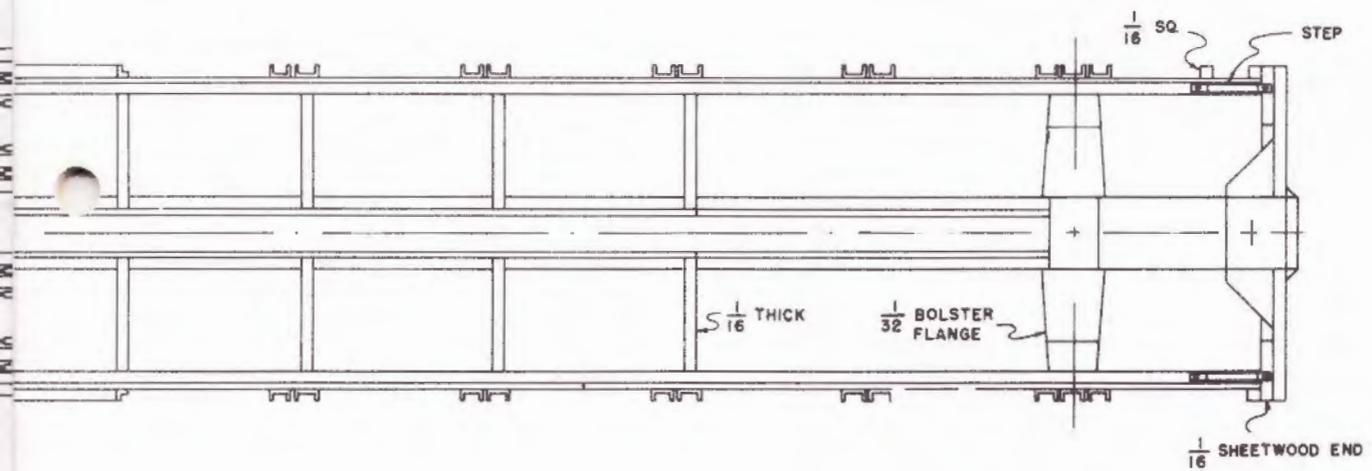
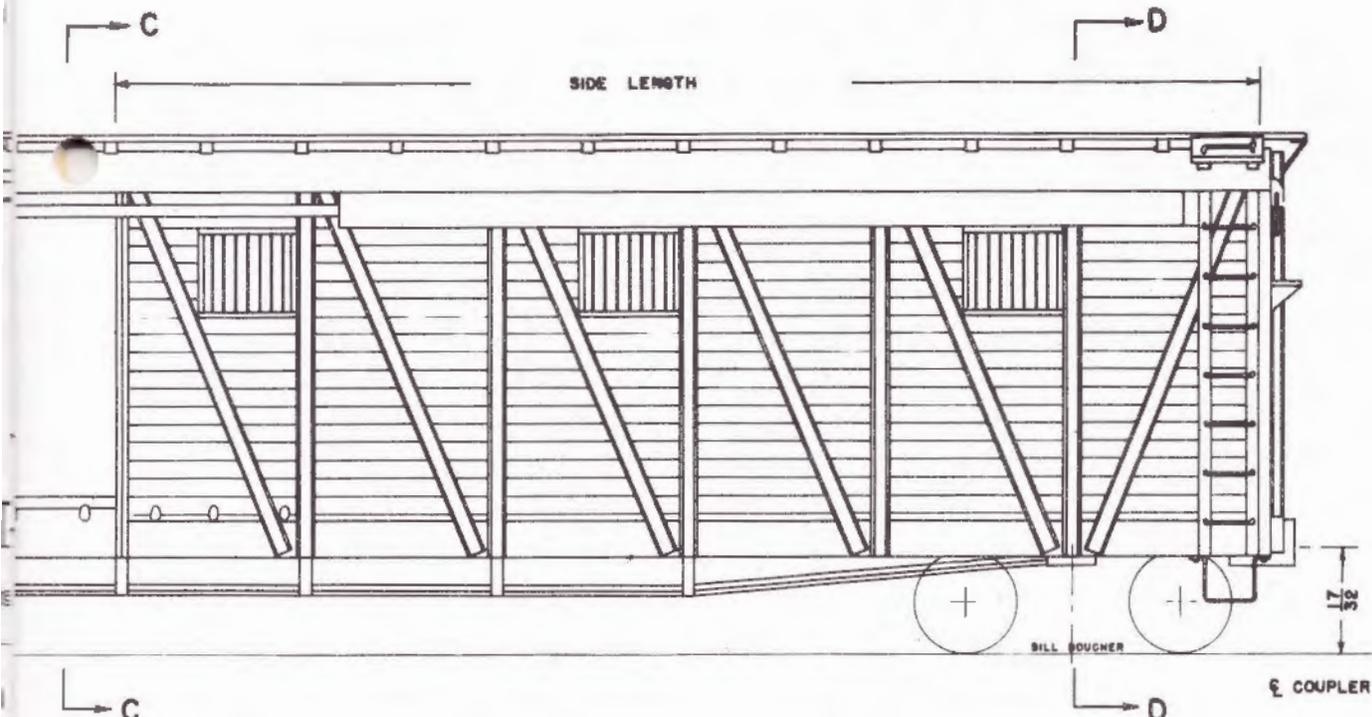


CAR #30 IS AN ELEPHANT CAR AND CAR #5 (SAME PLAN) CARRIED BAGGAGE AND SPARE EQUIPMENT. BOTH HAVE SAME DIMENSIONS AS ELEPHANT CAR IN PLANS.





**WOOD-FRAMED CAR**



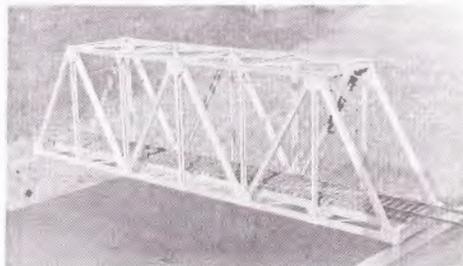
**STEEL-FRAMED CAR**

S Gauge

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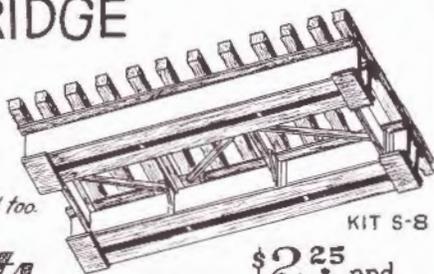


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wooden cars, recessed type on the steel cars. (1/16 quarter round is cemented in the recess to form the curved eaves). No underbody brake piping or rodding is shown, as this may be copied from any standard freight car plan. "K" type brake cylinders were most common, though I imagine the Ringling cars were changed to the three piece AB system to comply with I.C.C. interchange rules. Note too, that older cars used brake wheels, while newer ones used a lever type of hand brake. Some cars had brake platforms, others did not.

Here's an easy way to make barred windows: stick two pieces of 1/32 x 1/16 stripwood together at the ends only, then drill 1/64 holes through both pieces on 1/16 centers. Cut top and bottom window frames from this double strip; this'll insure matched holes, resulting in bars which are vertical and parallel. In building bull car sides, cut the side sheathing flush with the top of the windows. Cement the frames in place. Put 1/64 wire bars through the holes, then add the 1/32 x 3/16 strip along the top to keep the bars in place, and bring the side up to the correct height. Bracing is then cemented in place.

Door styles varied greatly, even on otherwise similar cars. Many had hinged doors like a refrigerator car, while others had sliding doors. Ringling bull cars had two doors per side; one solid, the other barred like a watermelon car door. Horse stocks often had one door which had its upper half barred and its lower half solid. For some reason, most sliding type doors slid to the left on circus cars, instead of the right as on other railroad cars. My barred doors had frames cut in one piece from 1/32 thick sheet scribed on 1/16 centers. Wire bars were cemented in the scribed grooves, and the door was then reinforced with 1/32 x 1/16 stripwood. The back of the scribed sheet forms the outside face of the door.

Size and location of letterboards will depend on the size and style of lettering to be used. Ringling used narrow letterboards just under the eaves, like a passenger car, while most other outfits used a wide letterboard halfway down the side. Whichever you use be sure it doesn't foul the car doors when they are opened.

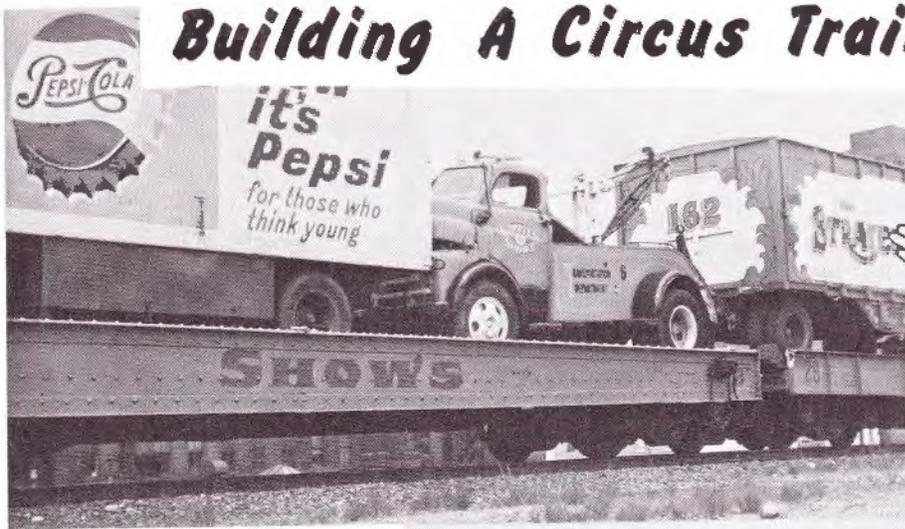
If you're using American Flyer track with its sharp curves, I suggest shortening these cars to a scale 60' in length. This is prototypical, since 60' was standard length for most circus cars up through the twenties. To do this, just eliminate the panel nearest the door on each side half.

The next part of this article will contain full size 3/16" scale plans to make the three types of flat cars used in circus trains; the sleepers, diners, and observation cars; and instructions on how they were painted and decorated.



# Building A Circus Train In S Gauge

BILL BOUCHER



THESE PHOTOS SHOW TWO TYPES OF FLATS--(WARREN AND MT. VERNON)-- BOTH SHOWN IN THE SCALE PLANS.



Our author, an excellent craftsman with a fine imagination and ingenuity for improvising, tells us how he built his Royal Circus, an outstanding accomplishment in a gauge where many parts and supplies are just beginning to become available. Whether you intend to build a circus train for yourself or not is of little consequence, but the methods and materials that Bill uses will impart some knowledge of how he availed himself of anything useable within his daily range. The fellow who develops this instinct for scrounging, or substituting, will tackle any model with complete confidence and assurance. Just as in converting one model into another, this searching and substituting of available articles for the item you need can be an exciting, stimulating, and very rewarding phase of model railroading in S gauge.

## (PART II)

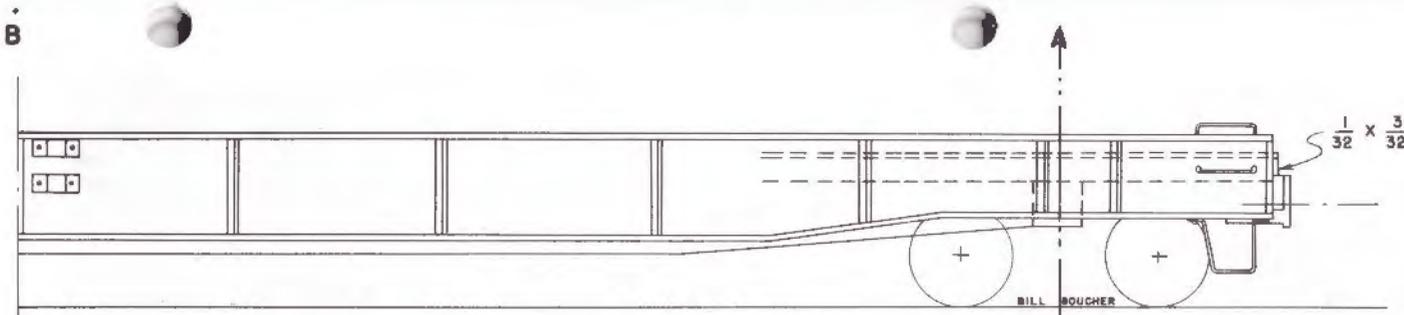
**FLATCARS.** The biggest part of the train will be composed of the flatcars which carry the wagons, trucks, and other vehicles. Because even a small circus (with the exception of some of the two and three car dog and pony shows of the early 1900's) will have at least half a dozen flats, I tried to come up with a design which could be built quickly, without too much detail, and still appear authentic. As a result, the "Royal" 'S' Circus' flats are pretty elementary. Only such detail as is readily seen was included. Underframes consist of two body bolsters with a piece of stripwood having beveled ends for a center sill. I didn't bother with stringers, crossbearers, brakes, etc. In fact I even dispensed with brake cylinders! The deep sides hide the underbodies anyway, even when viewing the train at eye level. Since attention usually centers on the cars' loads, I took the easy way out.

The plan shows three types of flats; two 70 footers, and one 60 footer. The older wooden flat is similar to the wood stock cars in floor construction, so floor stringers can be installed if desired. The steel cars represent the fish-belly sided Mt. Vernon Car Co. design, and the more modern girder-sided Warren Tank Car Co. design. Note that the Warren Flat has a very slight curve on the edges of the sides.

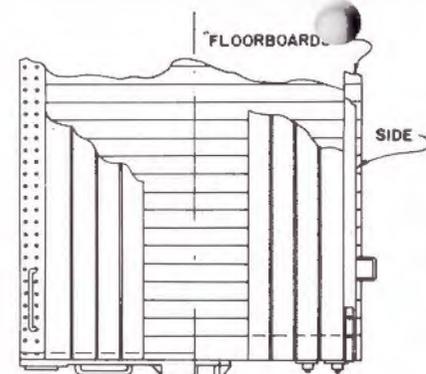
The Mt. Vernon car is the easiest to build. Sides are 1/16 sheet, top and bottom flanges are 1/32 x 1/8 strip, vertical bracing is 1/16 angle. The Warren flats have 1/16 sheet sides, 1/32 x 1/8 flanges, and have heavy paper strips with embossed rivets cemented as shown. These strips are a nuisance to make, but they make a great deal of difference in the appearance of the car, so cannot very well be omitted. I did not, however, rivet the inside face of the sides, nor the bottom of the lower flange.

In all cases, I used regular Northeastern freight car floor, scribed crossways to represent a planked deck. While this results in an out-of-scale thickness, I depended on the floor for strength. If you want to use a scale floor, then you'll have to build the underframe complete with stringers and crossbearers to brace it. Again I chose the quick way. Note that on the wood flat, the ends of the floorboards show. These are "faked in" by cutting narrow strips across the grain of Northeastern scribed wood, and cementing the strips in place as per the cross section view. Stake pockets are cut from brass or tin can metal. Ajax brake wheels are side mounted as shown. Again, levers may be substituted in place of the wheels if desired. The usual freight car safety appliances are also added.

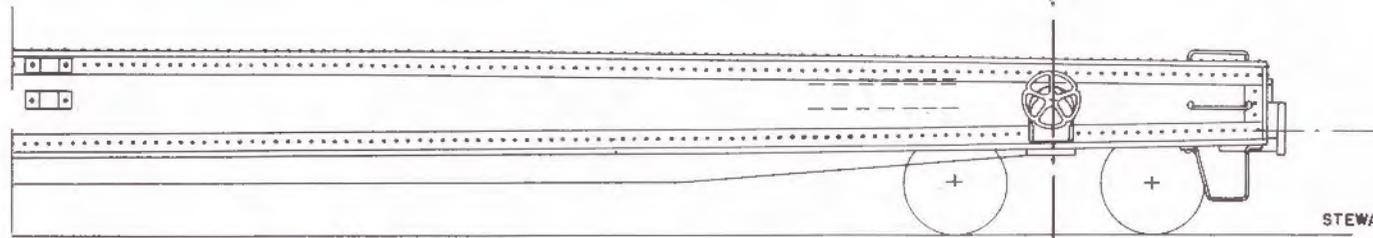
I used dummy couplers for the most part in order to keep coupler slack down to a



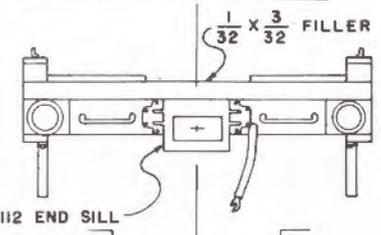
**MT. VERNON TYPE CAR**



**STEEL**      **WOOD**

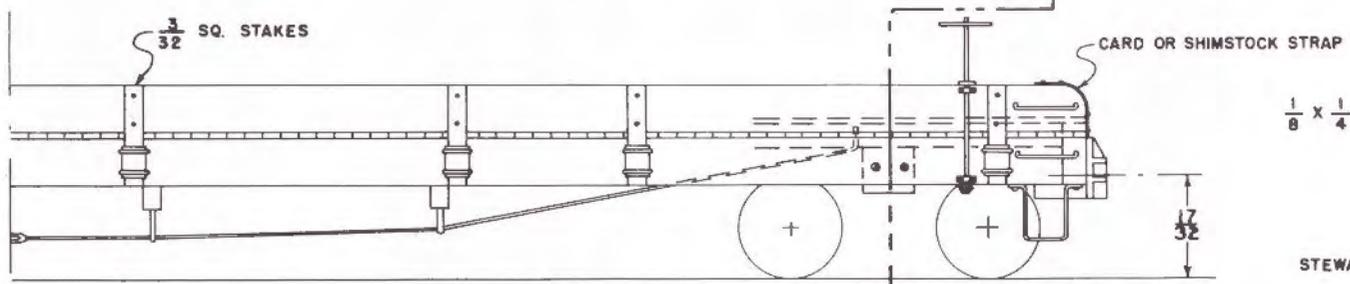


**WARREN TYPE CAR**

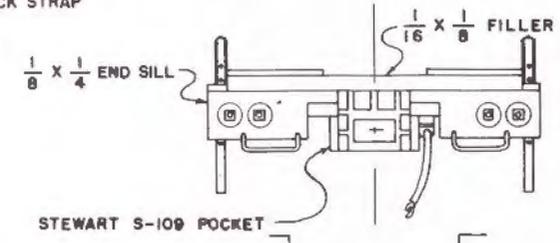


STEWART S-112 END SILL

**STEEL CARS,  
BOTH TYPES**

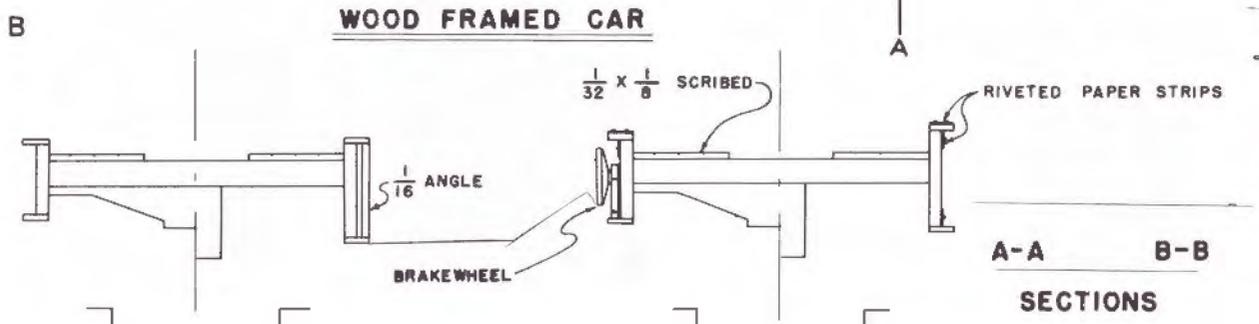


**WOOD FRAMED CAR**



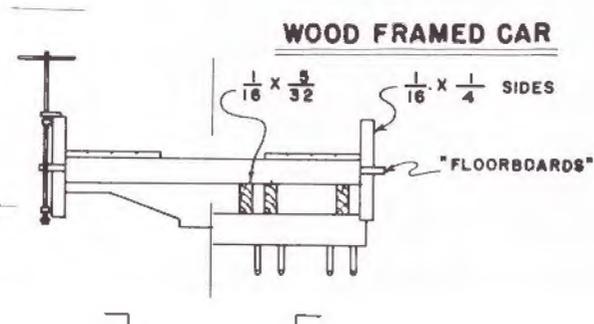
STEWART S-109 POCKET

**WOOD FRAMED CAR**



**A-A**      **B-B**

**SECTIONS**





WOODEN SLEEPER OF THE TYPE USED BY THE MAJORITY OF SHOWS DURING THE ERA OF CIRCUS TRAINS.

minimum. Slack running in and out on a long train causes no end of trouble with shifting loads. Although the wagons are blocked and chained on the cars, wagons poles, runs, jacks, and other stuff just tossed loose on the car decks tends to slide around and drop down between the cars, causing derailments. Circus trains are usually switched in cuts rather than by individual cars, so if the train is broken into two or three sections for easy storage, automatics need be used only at the ends of each section. As for trucks, Andrews trucks were the most common in later years, with Arch Bars on the older cars.

**SLEEPERS.** Because circus sleepers were simply standard railroad sleepers bought second-hand and rebuilt with additional permanent bunks, I have not gone into their construction here. Two excellent articles on wood passenger car construction, by W.G. "Gib" Kennedy, have appeared in Model R.R. for June, 1959, and March, 1960. The photos show a typical wood observation sleeper, such as was often used by the owner and other top officials and performers of a show. Plans for this car appeared in Model R.R. for April, 1957. Additional plans and pictures of cars suitable for use as circus sleepers may be found in Model R.R. for April, 1963, and in Lucius Beebe's superb book, "Mr. Pullman's Elegant Palace Car", available at many public libraries.

Northeastern wood roof, floor, blank siding, etc., are available in "S" scale. Stewart has cast steps, MHP has diaphragms, the Hobby Shop in St. Albans, Vt., has trucks. Many Walthers "HO" detail parts such as roof vents, traps, etc., are also suitable for "S" scale.

While most circuses used the older wood sleepers, at least one show, the James E. Strates carnival, is using thirteen regular heavyweight steel Pullmans of 1925 vintage on its train as of this writing. (These include 3 observation cars, 2 solariums, a diner, and seven "standard" sleepers!). Such cars could be built from Miller kits, or American Flyer pullmans could be used. Ringling Bros. replaced their wood sleepers in 1947 with a fleet of war surplus army hospital cars. Today these cars are used by the show as "tunnel" cars. With their ends and interiors removed, they serve as a sort of covered flatcar to carry specially designed truck trailers into which the show's equipment is packed. A few even have been converted to elephant cars! Modelers wishing to duplicate these cars will have to build them up from scratch, using Bristol board or Strathmore. Arch roof stock is not currently being produced in "S" gauge, but there are occasional lengths of Nimco and Superscale roofs to be found. Window louvres can be duplicated by rectangles of Northeastern "HO" clapboard siding cemented to the window glass. (Ringling removed the air conditioning units and substituted louvred panels in the center of the window openings). Dimensions of sides, (height, width of letterboards etc.) can be taken from any standard Pullman car plan. A floor plan showing the window arrangement of these cars is in Model Railroader for August, 1945. Ringling did not alter this arrangement when they remodeled the cars.

**PAINTING.** When it comes to painting, the sky's the limit. The ringling train in its later years was all silver, with red letterboards on stocks and sleepers. Lettering was



THIS IS A STANDARD STEEL DINER AS USED ON A SHOW TRAIN. NOTICE THE FANCY LETTERING. CAR HAS IVORY OR CREAM BODY, WHITE ROOF AND RED TRIM ON LETTERBOARDS. LOWER PANEL IS LIGHT BLUE AND GOLD. LETTERING WHITE WITH RED LOWER HALF OUTLINED IN BLACK.

ONE OF THE 3 OBSERVATION CARS USED ON THE STRATES' 1967 SHOW. EVEN A.F. EQUIPMENT COULD BE PAINTED AND DECALED TO REPRESENT THIS TYPE OF EQUIPMENT. CAR HAS WHITE SIDES AND ROOF, LIGHT BLUE OBSERVATION END AND VESTIBULE INTERIOR, ROYAL BLUE UNDERBODY, BLACK TRUCKS, LETTERBOARD, NAME PANELS, AND J.E. STRATES SHOWS RED, OTHER LETTERS GOLD. PANELS BETWEEN WINDOWS LIGHT BLUE WITH GOLD OUTLINE. ALL SCROLL WORK AND STRIPING GOLD.



gold on the red letterboards, or red with a white outline on the flats. Dimensional data was in black. Prior to 1947, the sleepers were red. Cole Bros. used a similar scheme in the late thirties, except that the red sleepers had a cream colored window panel. Hagenbeck-Wallace once had a tan train with blue letters. The aforementioned Strates carnival train for 1967 used orange flats with top flanges painted silver, black trucks, and red and blue letters. Stock cars were orange with silver roofs and multi-colored lettering. Sleepers were white with red letterboards, dark blue underbody equipment, black trucks, and medium blue ends on the observation cars. Lettering is gold on red, red or blue on white. All striping is gold. The dining car has white roof but cream colored body.

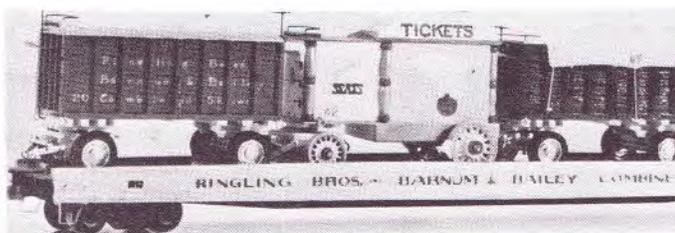
As a general rule, aluminum does not look good on a model. The combination of artificial light and wood grain results in a mottled gray appearance which looks nothing like the silvery white of the prototype. Then too, aluminum paint was pretty expensive, and didn't come into general use much before the early thirties. Many shows used red, orange, yellow, or white for their railroad cars. The "Royal 'S' Circus" uses Pactra flat aluminum for its steel flats. Stock cars and sleepers have orange bodies, with brown roofs and black trucks and underbodies. Lettering is red, outlined with black on the stocks and sleepers. Railroad

Model Craftsman for June and July 1966 has some excellent material on circus cars, including painting and lettering diagrams for flatcars owned by eighteen now-defunct circuses.

Whatever color you use, give roofs and parts that would be steel in prototype 'a couple of coats of sealer before painting them. Flatcar decks should be stained to represent weathered wood, as are the underbodies of the old wooden cars. Underbodies of steel equipment are usually black.

Walters has HO decal sets suitable for S gauge with circus motif. Set #1485 is fine for a Ringling Bros. coach and sells at 50¢. The #1486 will be fine for an advertising car. (See Herald 1967 Yearbook "This and That" column, page 3).

Next issue we'll look at the wagons to be loaded aboard the train, and show how to build 'em in 3/16 scale.



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(ERT)

# Building A Circus Train In S Gauge

BILL BOUCHER

In this third part, Bill discloses how he makes some of the wagon parts and equipment he carries aboard the flats described in his previous article. He gets us started mass producing the standard equipment, and obtaining wheels and other components in preparation for the conclusion in which the real fun begins----Making the various colorful circus wagons.

(PART III)

In the last issue we examined the various types of railroad cars used to transport the circus. This month let's turn our attention to the wagons, trucks, and other vehicles carried aboard the train.

Due to the highly specialized purposes for which they were designed, circus wagons present an infinite variety of sizes and shapes. Not only were the wagons of one show different from those of another, but the same variety existed even between wagons on the same show. A circus might carry ten baggage wagons, but each would be slightly different from the others. To add to the confusion, wagons which were carried on one show one year might very well turn up on a rival show the next year, since equipment constantly changed hands as the acts which utilized it moved from one show to another. It is this factor which makes modeling a specific circus so different.

In order to get around this problem, and avoid a tremendous amount of research, (which can be interesting, but which leaves very little time for railroading), I decided to free lance and standardize wherever possible. By varying lengths and details, the wagons would appear different, but the construction would be simplified.

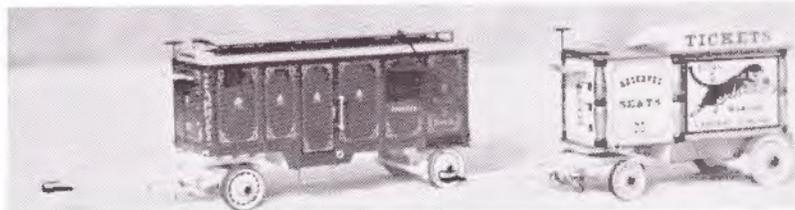
A good starting point for building this stuff is Wardie-Jay's catalog of 1/4 scale kits, and the catalog sheet of Simmons Scale Models' HO wagon kits. (Wardie-Jay's address is RR #1, Underhill, Vt. 05489 while Simmons Scale Models, Inc. is at 5602 No. Ridge Ave., Chicago, Ill. 60626). The Wardie-Jay catalog is illustrated with good photos of all their wagon models. Using plans from a couple of their kits, it was possible to work out dimensions for the rest of the others pictured. Having these, parts for 3/16 scale models were laid out using a regular "S" scale rule.

The Simmons catalog sheet has full side

elevations for their wagons shown to HO scale. I drew a line 4-29/32 long on the sheet and had it photostated, enlarging the image until the line measured exactly 6-9/16 long. This resulted in side views full size for "S" scale. Wagons could now be built directly from this.

The following prototype dimensions apply to most wagon types and can be used in conjunction with photos and sketches: Wagon bodies for baggage, canvas, generator, and stake-and-chain wagons run 12 to 16 ft. in length. Animal dens and cages start at about 8 ft. for cross cages, (so-called because they're loaded crosswise on the flatcars to save space) up through 12 ft. (a popular size with Christy Bros. and later Cole Bros.) to about 15 or 16 ft. Hippo dens were about 18 ft., though you can find an occasional 20-footer. Water wagons, steam boiler wagons and stake drivers ran 10 to 12 ft.; band wagons, calliopes, and some other parade floats ran 14 to 18 ft. Pole wagons ran up to 35 and even 40 ft., depending on the length of the poles they were to carry. (Big Top center poles were generally carried in hooks on the outside of the stakes on these wagons, and were longer than the wagon itself. They extended on either side of adjacent wagons when loaded on the train). The above lengths are measured over the body ends, and do not include the footboards which folded down out of the way for train loading.

Width of the wagons was about 6 to 6-1/2 ft. for wagons whose wheels were outside the body, or 7 to 7 1/2 ft. for wagons whose wheels were recessed into "wells" on each

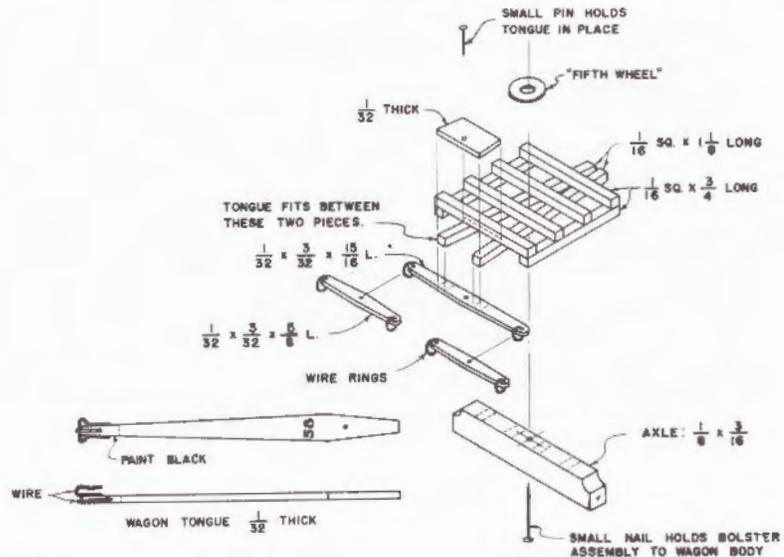
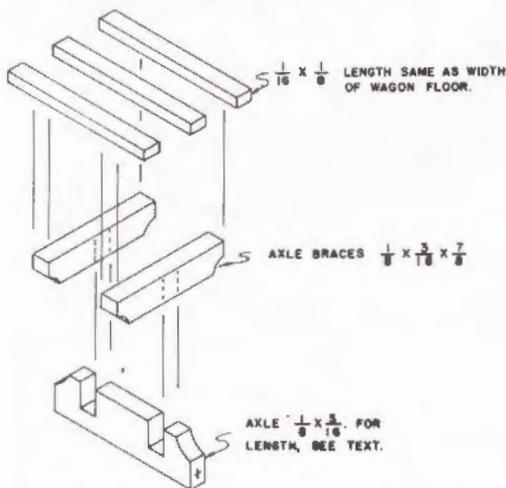


THE GAILY DECORATED TICKET WAGON (#25) ON THE RIGHT WAS 16' LONG LANCED FROM A WARDIE-JAY KIT. #26 GENERAL ADMISSION AND OFFICE WAGON IS 18' LONG, AND FORMER RINGLING BROS. WAGON FEATURED IN DE MILLE MOVIE "GREATEST SHOW ON EARTH". IT WAS COVERED WITH BOILER PLATE AND HELD THE RECEIPTS FROM ALL THE TICKET BOOTHS, CONCESSIONS, ETC.---LITERALLY A ROLLING SAFE!

side, or which were under the body. The important thing here is that the total width over the wheel rims be about 1/16 less than the width of the car decks, in order to make loading easy.

Height of the wagons is about 5 1/2 to 6 ft. from the underside of the floor to the top of the roof, with a proportionate increase in the case of a drop-frame type of wagon, such as the wagon shown in the drawings. Decorative "sky boards" along the edge of the roof are an extra 10 to 15 in. Just be sure that the height of the wagons plus the height of the flats is such that the train will pass under bridges and tunnels on the layout.

**REAR BOLSTER DETAILS**  
(USED ON ALL FLAT-FRAMED WAGONS)



One final dimension is wheel dia. Circus wagons usually used 3' dia. front wheels, and 4' dia. rear wheels. Rims were 6 to 8 inches wide.

Wardie-Jay uses two types of front axle and bolster assemblies on their kits. One is built up of stripwood and is used on all the utility wagons. The other uses cast metal "springs" held with ring shackles, and is used under the ticket wagon and animal cages. I tried cutting dummy springs out of wood and duplicating this gear on my #25 ticket wagon, but I decided the visible results weren't worth the effort involved, so I settled on the stripwood gear as standard for all my wagons. The plan shows this gear full size for "S" scale. The length of the axle itself will depend on the thickness of the wheels used. Obviously, dual rubber-tired wheels will necessitate a shorter axle than single spoked wooden types.

This might be a good time to discuss the problem of wheels. Prior to the 1930's, most circuses used the classic 16-spoke wooden wheels with iron tires. These wheels

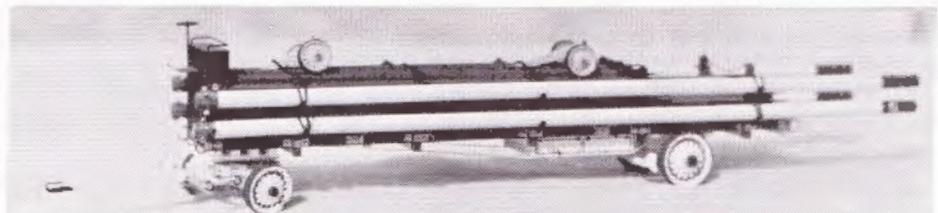
were strong, and their wider than usual rims gave them footing on lots that were often soft and muddy. However, as more and more city streets came to be paved with macadam and blacktop, rather than hard-packed dirt and stone blocks, the damage caused to the streets by these wheels forced the circuses to replace them, first with solid rubber, and later with pneumatic tires.

The type of wheels used on the models becomes a matter of personal preference, as well as depending on what's available. I started my "Royal 'S'" wagons using the plastic rubber tired wheels from Aurora's truck kits. These I mounted on 1/8 dia. dowel hubs, then I drilled the hubs and

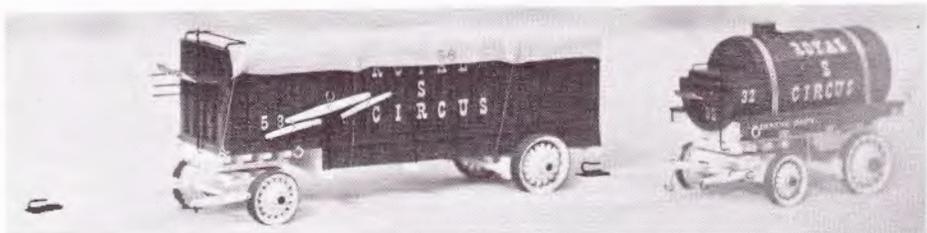
pinned the wheels to the ends of the axles. Later, I found I could use "O" scale front wheels on the rear of my wagons, and "HO" rear wheels on the front axles. This gave a reasonable impression of wood spoked wheels, but it still left much to be desired, as the "O" scale wheels were too thick, and the "HO" wheels too thin.

Recently, a new source of wheels has turned up. Frank Crumrine, 5075 La Dorna Dr., San Diego, Calif. 92115, markets plastic wood-type wheels in both 1/4 and 1/8 scales. (Builders living in the East can get them from Paul Horsman, c/o Circus Farm, Rte. 113, W. Fryeburg, Me., 04037). Two styles are offered: plain spoked, for baggage and property wagons, and the more ornate "sunburst" type, for parade and spec wagons. Tires on the 1/4 scale spoked wheels should be narrowed with a knife or file, as they project quite a bit beyond the rims proper. Sunburst wheels are O.K. as is. They both have much smaller hubs than the Wardie-Jay wheels, which makes them better suited to

BIG TOP POLE WAGON. 40' LONG, CARRIES 4 - 50' x 1" DIA. CENTER POLES, 18 - 38' x 8" DIA. QUARTER POLES, AND 22 - 28' x 8" DIA. QUARTER POLES. WHEELED GADGETS ON TOP ARE STAKE PULLERS. THIS LONG WAGON HAS LOTS OF CIRCUS CHARACTER.



RINGLING PROP. WAGON AS SHOWN ON PLANS. DINING DEPARTMENT WATER WAGON, RIGHT, HAS 7/8 DIA. DOWEL TANK SHEATHED WITH 1/16 SQ. STRIPWOOD. IT IS 12' LONG OVER-ALL. NOTICE TARPAULIN LASHED TO PROP WAGON.



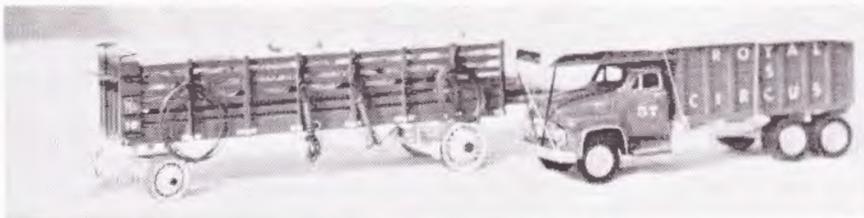
"S" use, and being white plastic, they need not be painted except for decoration. The "O" scale wheels (3/4 dia.) can be purchased in packs of four for 50¢. Be sure to specify the size, as they're usually sold in packs of two 3/4 dia. and two 1 dia. for regular "O" scale use. The 1/8 scale wheels, which are slightly smaller in dia. than the "HO" (3.5 mm scale) wheels produced by Wardie-Jay and Selley, are priced at 25¢ per set of two front and two rear wheels. The front wheels are much too small to be of any "S" scale use, but the rear wheels can be used on the front of "S" scale wagons if an extra washer is inserted between the two "fifth wheels" when mounting the front bolster assembly. I have also been informed that Mr. Crumrine will make up a special package of two 1/4 scale front wheels and two 1/8 scale rear wheels for "S" use if demand warrants. The price quoted was "about 35¢". The detail on these wheels is exquisite.

I adapted the cast metal front wheels as follows: the wheels were cemented to a sheet of 1/16 basswood. #60 holes were drilled between the spokes just inside the rim, the wheels were sprayed with white paint, and then cut apart. The wood was sanded to match the circumference of the wheel casting, and the rim was wrapped with a 1/8 wide strip of heavy paper to represent the tire. (The ends were cut to a length which allowed the ends to be butted together, rather than overlapped). Because of the relatively large number of wheels needed I made 'em up in batches of a dozen or so at

a time, drilling all the holes at once. This takes about half an hour if you have a drill press; otherwise, do what I did and spend an evening in front of the T.V. set with a pin vise.

These same theories of production can also be applied to other parts. Front and rear axles, axle braces, wagon tongues or poles, whiffletrees or equalizers, even complete front bolster assemblies can all be shaped from stripwood, footboards can be bent from tin can metal crimped around a wire staple, and hip rings can be bent from wire. An easy way to make these is to wind a length of soft wire (about .020 dia.) around a piece of 1/16 wood dowel. Keep the turns squeezed together as you wind. When you get an inch or so wound, cut off the dowel at the ends of the coil, clamp it by its ends in a vise so the coil can't slide off, and cut through the coil lengthwise into the wood (use a Zona saw or a knife edged file), release the vise and you'll be able to slide off half a hundred perfectly formed wire rings. A few evenings spent thus will result in a ready supply of wagon parts which will eliminate much of the tedious work of building a large number of wagons.

You can keep busy accumulating the necessary parts and supplies needed to build some of the wagon parts for your circus train until next issue. Therein we will relate how to complete the wagon bodies and show the various types that were common.



MENAGERIE WAGON, LEFT, IS COPY OF WARDIE-JAY'S, IS 28' LONG. CANVAS TRUCK IS MADE FROM AURORA PLASTIC TANK TRUCK CAB UNIT; IS 24" LONG. MANY "MATCHBOX" SERIES CAN BE USED.



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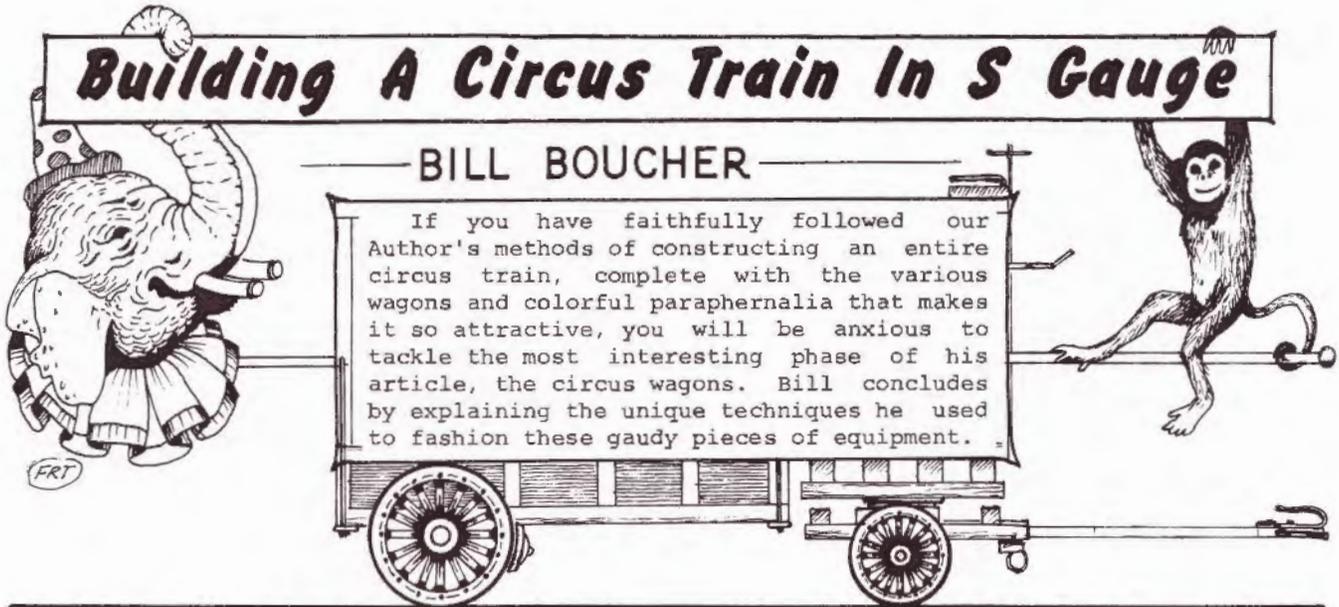
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# Building A Circus Train In S Gauge

BILL BOUCHER



Rather than attempt to give individual plans for two dozen wagons, I've shown elevations and isometric views of two of the most common types of wagons, as well as details of bolsters and running gear. Side view photos of several other styles are also given. These can be built using the aforementioned dimension limits and the running gears described above. For the most part, wagons are built like boxes, with a floor, roof, sides, and ends. For the roofs, I used "HO" caboose roof, narrowed where necessary, as shown on the drawing. Bracing is stripwood, tool boxes are blocks of wood painted and the doors and latches drawn on with India ink. Stake pockets are shim stock, brakewheels are "HO" freight car wheels.

Some of the wagons posed individual problems: the generator wagon #11 houses a diesel generator set sold by Stewart Products of Portsmouth, R.I., as an "HO" flat-car load. This is one of the few wagons on the show having hinged doors. This was accomplished by making the doors of 1/32 sheetwood, cementing a length of piano wire to the "hinge" edge, and inserting the ends of the wire in holes drilled in the vertical side braces.

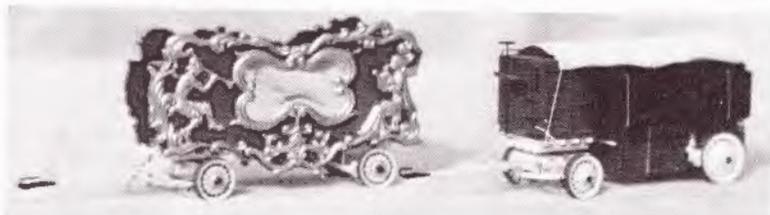
The Wardie-Jay ticket wagon has cast metal corner posts. I duplicated these by turning the posts out of 3/16 dowel held in a hand drill clamped in the vise, using files and sandpaper as turning tools. I made three, then split 'em lengthwise with a Zona saw. Each half was painted, then cemented to the body. The peaked roof over the rear portion is cut down "HO" freight car roof.

The cage sections carried on the sides of

the giraffe wagon #81 are copper window screen soldered to rectangular wire frames and painted flat black. There are eight of these sections.

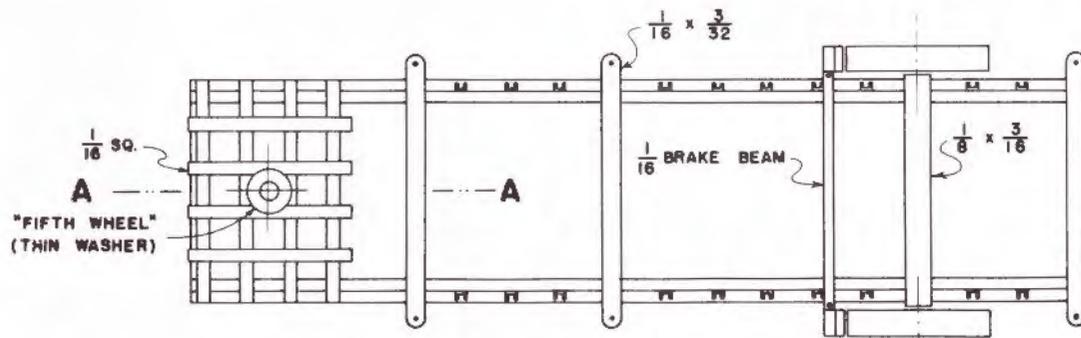
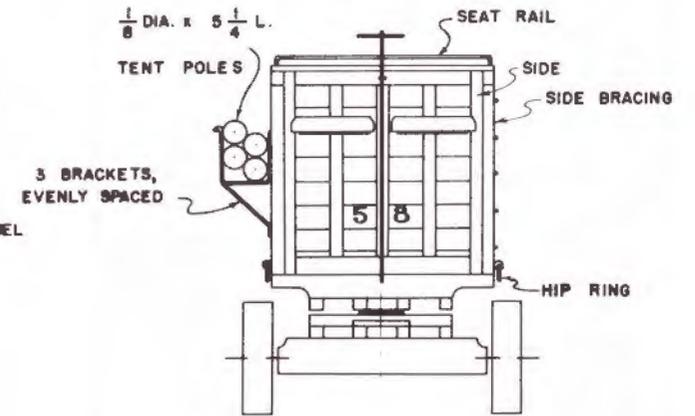
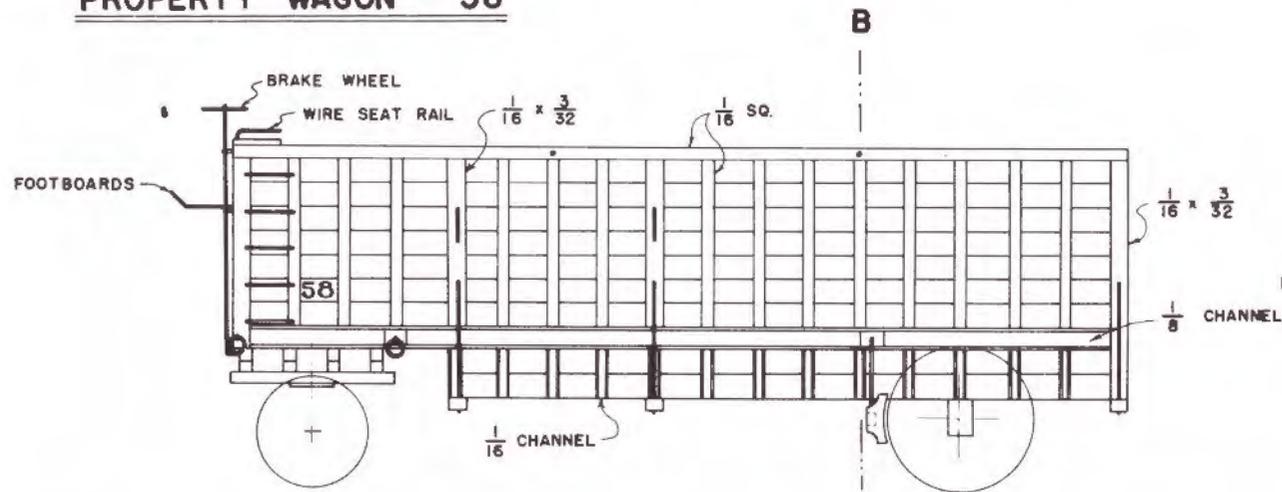
The bandwagon #34 is typical of the more ornate type of parade wagon. For the bas-relief carvings on the sides, I used the plastic "carvings" from a Glove "O" scale plastic calliope wagon kit. This calliope is small in 1/4 scale, so the scrolls can be used on what was often one of the largest wagons in a show, the bandwagon. Roof, ends, and floor are equal in width, and 1/16 basswood sides, cut to the outline of the scroll work, are cemented in place. Transverse seat benches were installed on the roof, while doors in the rear permit storage of band instruments, etc., inside. In building carved wagons of this type, many of these plastic scrolls can be cut apart and rearranged to fit 3/16 scale wagons. Glove plastic wagon kits are obtainable from W.K. Walthers, 1245 N Water St., Milwaukee, Wisc., 53202, as well as from Frank Crumrine. (See Part I).

Another source of raised scrollwork is the plastic cigarette packages used for certain brands of cigarettes. These contain an embossed herald or emblem or two lions with a sort of coat-of-arms in the center. Cut out and painted gold, this is very effective. The corrugated corners of the packages can be cemented to wood dowels and used as decorative corner posts on certain wagons. Some brands of liquor use molded plastic designs on their gift packages during the Christmas season. Embossed greeting cards are another source of scrollwork. Female figures as sold for use as model ship figureheads by hobby shops selling

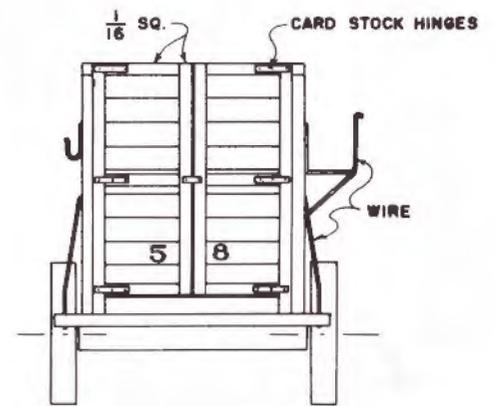
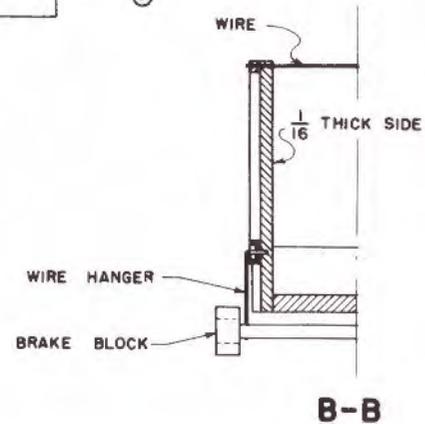
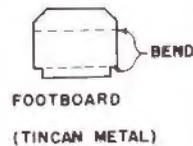
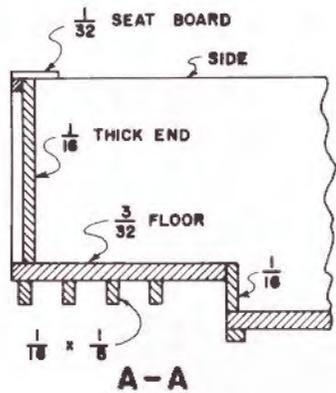


#34 BANDWAGON, LEFT, WAS CUT TO FIT GLOBE "O" SCALE PLASTIC SCROLLS, HAS ALUMINUM FOIL SIDE "MIRRORS". GIRAFFE WAGON, RIGHT IS UNUSUALLY DEEP, IS 18' LONG, HAS ROUND ROOF OF GREATER RADIUS THAN MOST OTHER TYPES.

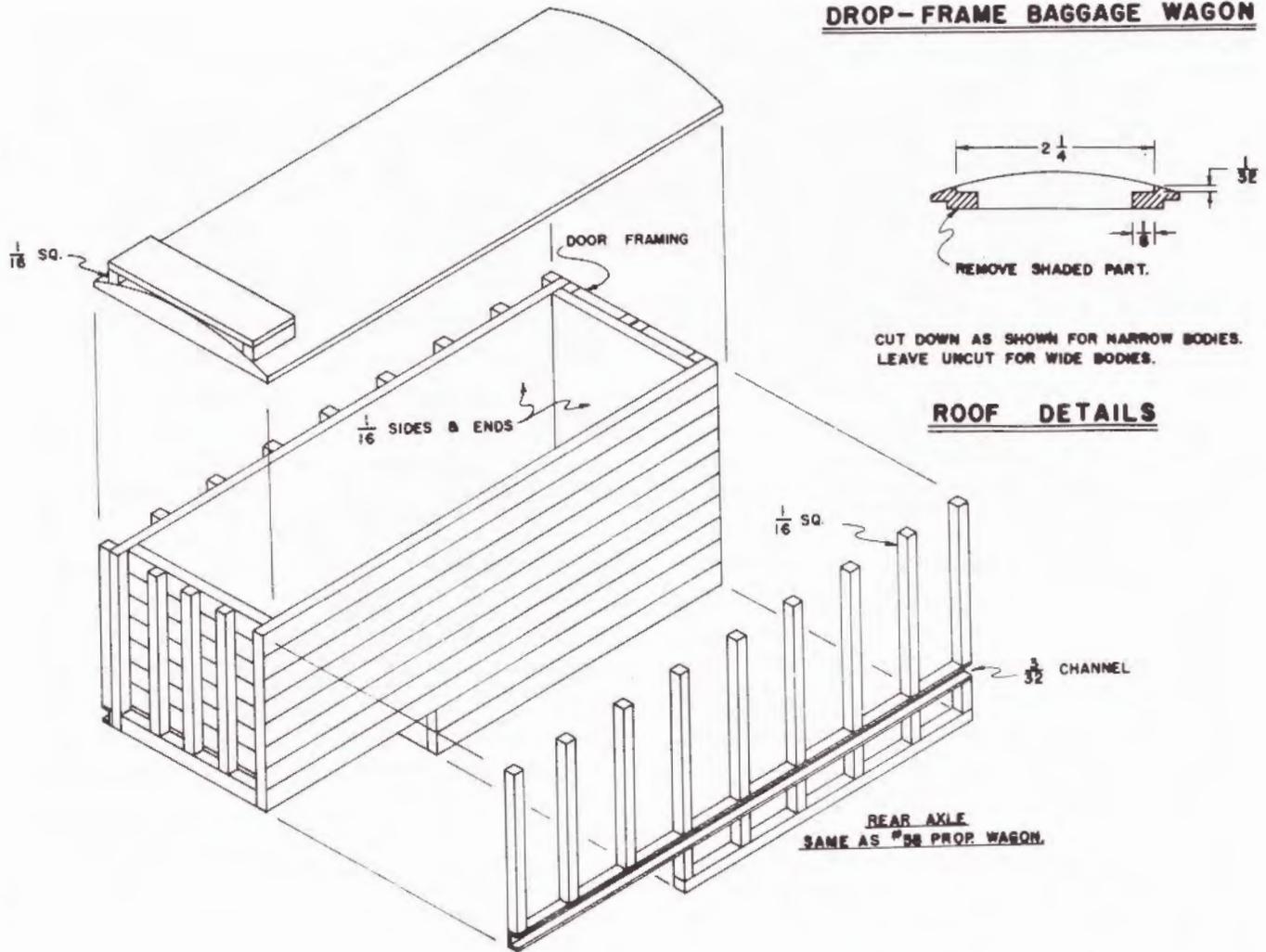
9 RINGLING BROS., BARNUM & BAILEY  
PROPERTY WAGON # 58



NOTE:  
 SIDES SAME LENGTH AS FLOOR.  
 ENDS FIT BETWEEN SIDES  $\frac{1}{16}$  IN FROM ENDS OF FLOOR TO ALLOW FOR END BRACING AND DOOR FRAMING.  
 FOR AXLE LENGTH, SEE TEXT.



## DROP-FRAME BAGGAGE WAGON



marine models can often be used, since many circus wagons featured similar figures from mythology at the corners.

Some wagons had large mirrors on their sides. Aluminum foil makes a good imitation, if it's not wrinkled. In many instances, painted designs were used instead of, or in conjunction with carvings. Stationery stores often sell gummed seals in a variety of designs including animals, birds, flags, etc., which lend themselves to circus use. A number of excellent molded or cast animals are to be found in dime stores, novelty shops, and other similar "junk" emporiums. A little effort often yields surprising results.

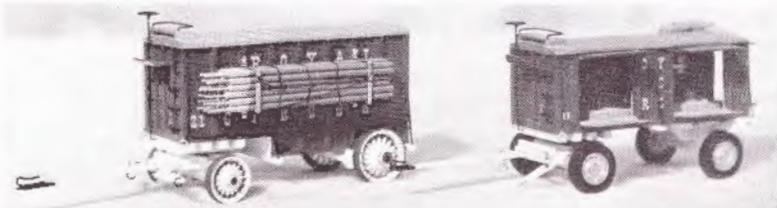
Many wagons, particularly parade wagons and animal cages, are kept covered with canvas while on the flats. Good tarpaulins can be cut from a cheap linen handkerchief. This cloth is thin but not transparent, it's strong, and does not "fuzz up" too much. Tan thread is cemented at the corners on the underside, and the cover is then tied in place on the wagon. Sometimes two pieces of

canvas were used, one to cover the top, and the other to wrap around the sides. This makes modeling much of the wagon body detail unnecessary, since all that shows is the running gear and general body silhouette as seen under the canvas.

To the best of my knowledge, there are no 3/16 scale Mack trucks available unless you can find some old Tootsie Toy Macks which used to be sold in 5 & 10 stores. However, there are many other well-detailed trucks of various kinds as well as tracked and wheeled tractors in the Lesney "Matchbox" series and Winross truck models. Repainted, these make good circus vehicles.

**PAINTING:** Most circuses had a definite color scheme for their wagons. Red was perhaps the most common, with undersides and running gear white or yellow. Roofs could be red or aluminum, hardware, such as grabs, hinges, hip rings, etc., aluminum or black. Sells-Floto at one time reversed the above, and used green and silver on the cookhouse and commissary wagons. Parade wagons often ran the range of the spectrum. Pastel colors were rarely used, but red, orange, yellow,

DROP-FRAME BAGGAGE WAGON, SHOWN IN ISOMETRIC VIEW IN PLANS, CARRIES 1/16 DIA. TENT SIDE POLES IN RACKS ON WAGON SIDES. ELECTRIC LIGHT GENERATOR WAGON RIGHT, 15' LONG, CARRIES "HO" STEWART PRODUCTS GENERATOR.





ANIMAL CAGES. 15' SEA LION CAGE HAS SIDE COVER BOARDS IN PLACE READY FOR RAIL MOVEMENT. 20' HIPPOPOTAMUS DEN, RIGHT, HAS COVER BOARDS REMOVED TO DISPLAY CAGED HIPPO. SIMMONS "HO" DECALS ARE USED. ANIMALS OF CORRECT SIZE CAN BE FOUND IN 5 & 10 OR CIRCUS DEALERS CATALOGUES.

green, blue, and white were very common, sometimes all on the same wagon! Carved figures and scrollwork were usually in gold or silver leaf. Wheels of utility wagons were less ornate than parade wagon wheels, but even these were lined and striped in red or blue.

Many styles of lettering were employed, generally white, silver, or yellow, often outlined or shaded with a contrasting color. If you're adept at hand lettering, you can have any style you wish. I used alphabet decals in both red and white, depending on the background color. Both Walthers and Champion (and I assume Enhorning) have lettering styles and colors suitable for circus equipment. In addition, decals for some of the better-known shows, such as Ringling Bros., Cole Bros., Terrill Jacobs', etc., are available, as well as such specialty sets as scrolls, clown figures, tigers (World's Largest Circus), etc. Another source of excellent decals for circus wagons is the previously-mentioned Simmons Scale Models, Inc. Although intended to accompany their line of "HO" kits, these decals can be cut apart and spread out to fit "S" scale wagons. They are available separately at 15 and 20¢ per set, depending on the particular wagon in question. The line includes chrome yellow, as well as names for the side coverboards of the cage wagons, such as "Sea Lions", "Royal Bengal Tigers", etc. This lettering is in blue.

As for the equipment which was carried in the wagons, I settled for a few tent poles here, a coil of rope or a ladder there, etc. Some 3/16 dowel about 48' to 50' long for the Big Top center poles, plus shorter 1/8 and 1/16 in. dowels with short pieces of wire inserted in one end for quarter poles and side poles look good loaded on the pole wagon or carried in slings on the sides of some of the canvas wagons. Lengths of chain, rolls of handkerchief cloth tent "canvas" and extra whiffletrees (for multiple horse hitches) swinging from hooks on the sides of the wagons are effective, too. Additional stuff will suggest itself as you go along.

"Royal 'S'" wagons are chocked in place on the flatcars with pieces of 1/16 sq. wood about 1/4 in. long in front of and behind each wheel. In addition, short lengths of fine chain are pinned to the top of each flatcar side, about 1/2 in. from the car end. These chains have a wire hook in the free end which can be slipped through the hip rings on the corners of the end wagons. The chains are long enough to slip through the rings easily, but not so long as to allow the wagons to roll up and over the

wheel blocks.

Usual circus train makeup placed the stockcars behind the engine, followed by the flats, with the sleepers on the rear. If you are planning steel flats with wood stocks, put the stocks behind the flats so that their wood frames won't have to take the pull of the heavy flatcars. Circuses are classed as freight extras by the railroads handling them, so you'll need a caboose on the tail end to accommodate the train crew as well as the various railroad officials who usually accompany a show train over their division.

That's the story. We've waded through some rather lengthy explanations, but if you've stayed with me, you've got the makings of some of the most colorful railroad equipment ever built.

Material for this story was obtained from a variety of sources. Particularly helpful were the following:

"Little Circus Wagon", official publication of the Circus Model Builders' Assoc.

"Bandwagon", published by the Circus Historical Society.

Mr. Paul Horsman, of "Circus Farm", W. Fryeburg, Me.

Individual members of the Carl Hagenbeck Ring of the Circus Model Builders' Assoc.

ED. NOTE: A slight error was made in the 3rd installment of this article which should be corrected. The front and rear bolster drawings on page 11 are not drawn to scale as stated in the text. The wagon tongue length (not given) is 2 1/4". If any other dimensions are taken from the plan, they should be increased by one third.

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