

ROLLING STOCK: SCRATCHBUILDING WAGONS IS EASY!

Voie Libre

Voie Libre

#102

THE MAGAZINE OF RAILWAY CREATORS



DOSSIER
How to properly
model the CFD

LAYOUT

ALPHONSE, A CAMEL
THROUGH A NEEDLE:
MICRO-LAYOUT IN HO-9

TECHNIQUE

PRINTING SLEEPERS
IS POSSIBLE !

LET'S TALK CFD!

BILLARD A 80D
AND CFD WAGONS IN SIGHT

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Kits**
VOIE LIBRE



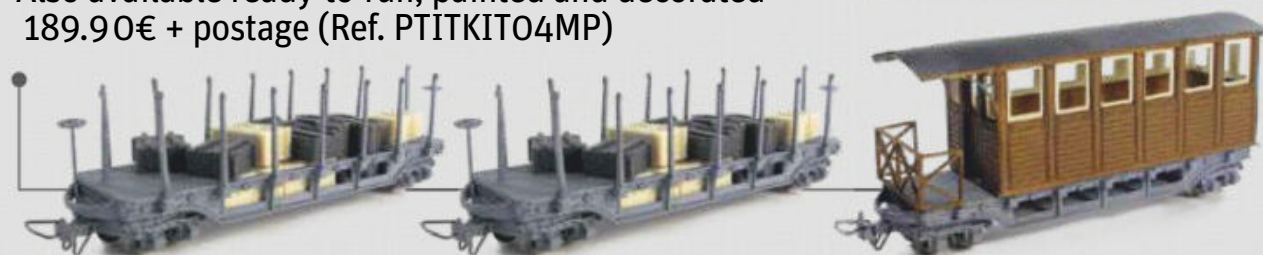
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This fourth set in the range contains: 6 trucks, 3 platforms, 63 stanchions, 1 omnibus body, 24 loads (the locomotive is not supplied).

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LR mOdélisme

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July, August, September 2020

Editorial #102

BE CREATIVE!

Summer is back. Time for holidays, moments of leisure, the simple pleasures of contemplation. But this is also when the new REE productions hit the market: CFD wagons, to start with, followed by the Billard railcar. Railway vehicles dripping with the atmosphere of rural France, of our familiar countryside... A countryside that conjures up childhood memories and images of yesteryear. All of which we would like to enjoy during these days of freedom.

So, how about letting our mind roam? How about setting our imagination free, how about starting the summer with a blank page, where we could draw a piece of our very own scenery, inhabited by the friendly shape and sound of the A 80D railcar? Enjoy the summer, observe reality, imagine, dream, create your little world, design what will accommodate your hobby. Have a wonderful holiday and enjoy your reading.
François Fontana

→ Follow us on Keep in touch all the year round with **Voie Libre** on blog.voielibre.com

TABLE OF CONTENTS

What's New 4

Layout

Établissements Alphonse, squeezing through the eye of the needle in H0-9 12

CFD Dossier 19

The Billard A 80D railcar by REE in 1/87 scale 20

CFD wagons 22

The CFD wagons by REE in 1/87 scale 26

A CFD building by Architecture et Passion ... 28

How to properly install a CFD type station .. 32

Rolling stock

Box vans in 0 scale narrow gauge 37

Technique

Printing your sleepers! 42

Motive power

Converting an Atlas tramway into a railcar in 1/87 scale 48

Layout

The mine of dreams, a micro-layout in 0 scale 53

Motive power

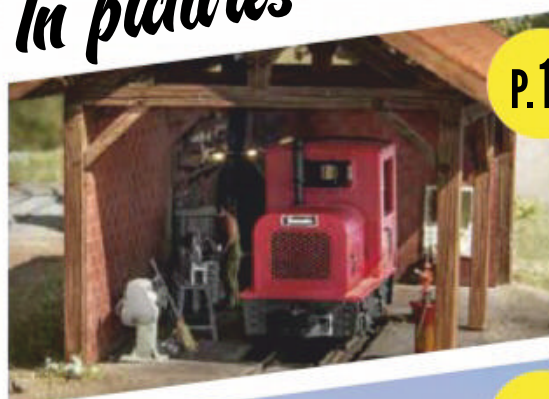
Building the CDCO A1 railcar in H0 57

Central folder

COMPAGNIE DES CHEMINS DE FER
DÉPARTEMENTAUX,
AUMAGNE-REIGNIER STATION
WELL, COGNAC STATION
TILE, PERRUSSON STATION
PARTS FOR THE A1 CDCO RAILCAR
WAGONS

In pictures

P.12



P.19



P.57



What's New

H0-12

TILLIG : NA NEW LIVERY FOR THE MEFG RAILCAR

This new livery for the Tillig MEG T3 railcar is an advertising version for the Jägermeister liqueur, orange on a blue and cream background.

Jacques Royan

TILLIG

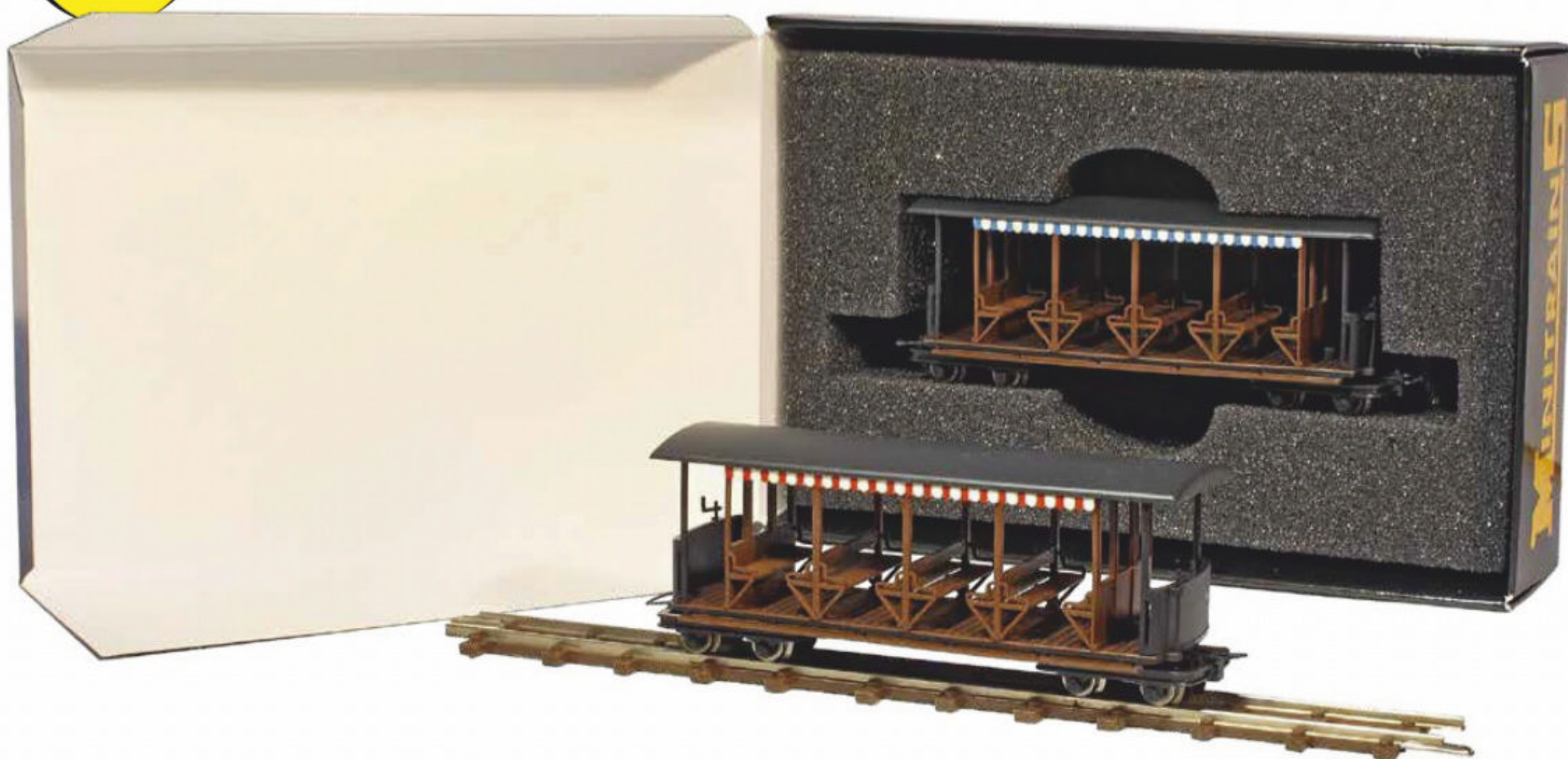
REF. 2943

PRICE OBSERVED: 220€



00-9/
H0-9

MINITRAINS : TOAST-RACK CARRIAGES



MinitrainS has released these delightful bogie toast-rack carriages. Inspired by those illustrated in the Decauville catalogue, they feature four compartments with wooden seats, and two end balconies with brake handles. The step is glued under the floor, it conceals the trellis chassis of the Decauville prototypes. The end bulkheads and the roof are painted black, the seats and the floor brown. A choice can be made between two references with white and red or white and blue tarpaulins. The carriages

are fitted to the chassis of the brand's standard trucks. Their length (80mm), much shorter than the prototype dimension, means they can run through all types of curves, on all types of layouts, and behind any small diesel engine or steam locomotive. The height of the seats and of the roofs is such that seated figures will have their feet on the floor, and standing figures can be present on the end balconies. Essential items on tourist, seaside and other secondary railways!

François Fontana

MINITRAINS

REF. 5198 RED AND WHITE

REF. 5197 BLUE AND WHITE

PRICE: 34.90€

00-9/
H0-9

PECO : THE BUG BOXES HAVE ARRIVED



These carriages are incredibly small, low-slung and differ completely from commonplace images of what passenger carriages should look like. Imagine, the wheels and axleboxes are invisible, the single seat is installed in the middle of the carriage, with passengers placed back-to-back. Even in 1/76 scale, a larger one than our continental 1/87, these carriages remain tiny! True, they are only 26mm high and wide, but they skim the rail head! So, make sure that weeds, turnout levers or platforms are not

too high. All 3 carriages, manufactured in the UK, share a common base onto which the various parts click, including different body sides to obtain an open carriage, a third class one and a first class one. The roof is removable, meaning figures can be installed inside, but the windows are so minuscule that I think I won't bother except for the open carriage. Peco markets them in two different liveries: «early preservation», the models reviewed here, or Victorian period, brown and white.



Of course, these carriages will look fine behind the future Ffestiniog Railway locomotives announced in partnership with Kato. But they will also look good behind a MinitrainS Bagnall 0-4-0 T or a Bachmann Baldwin 4-6-0 T.

François Fontana

PECO

REF. PRESERVATION: GR- 551 (1ST CLASS), GR-556 (3RD CLASS), GR-561 (OBSERVATION CAR)

REF. VICTORIAN LIVERY: GR-550 (1ST CLASSE), GR-555 (3RD CLASSE), GR-560 (OBSERVATION CAR)

PRICE OBSERVED: 29€

H0-12

MINI MINIATURES : A GENOA – CASELLA DRIVING UNITS



This is a very fine model, and more importantly the reproduction of a modern unit. The Genoa – Casella line is operated with 3 units built between 1993 and 1996. They haul bogie carriages on this single track line. The model, available in the three different versions, is made out of cast resin, and fitted to a Halling chassis. The lighting is provided by diodes while the details, including the window frames, are etched metal add-on parts. The specific pantograph is made out of brass. This model is an elegant alternative to the Swiss driving units produced by Bemo or Fulgurex !

François Fontana

MINI MINIATURES

REF. 201180.2: DRIVING UNIT AND TRAILER

Contact : info@mini-miniatures.it

PRICE: 419€



LEOPOLD HALLING MODELLE : THE SOLLER TRAM

Built in 1912, the 914mm gauge Soller tramway line, on the island of Majorca, connected the town of Soller to its harbour, a distance of 5km. The Austrian manufacturer, specialized in urban trams, has produced a fine injected plastic reproduction of this pleasing motor unit in wood and red livery. The driving mechanism is a universal bogie developed by the brand, which fits under the chassis and inside the body without being visible

through the windows. As is customary, the models are available in de-motorized version for showcase modellers, and in motorized version for those who like to run their trams. The firm produces the models with the numbers of the four different units, 20, 22, 23 et 24.

François Fontana

LEOPOLD HALLING MODELLE

<https://shop.ferro-train.com>

REF. MAL-T20-M (MOTORIZED VERSION OF N° 20)

REF. MAL-T20-S (FOR THE SAME NON MOTORIZED)

PRICE (MOTORIZED): 179€

PRICE (NON MOTORIZED): 145€



NARROW GARAGE : A BOGIE RAILCAR

This is a Japanese artisan production, made of cast resin and white metal. It comes together in no time and fits onto a Tomytec TM-21 driving chassis. The very type of ultrasimple model in terms of assembly, the ideal project for a busy evening or a few hours on a Sunday when the family is away. In summary, this Nissha Railcar is a highly unusual machine for us European modellers, and provided some care is taken, will look absolutely stunning on a narrow gauge layout. One of the parts I found in the small cardboard box was slightly warped. Nothing serious, a few minutes in very very hot water and some pressing on a slab of wood, and everything was back to normal. The parts are neat and do not require much cleaning nor sanding. The model is assembled using cyano adhesive, a few drops are quite enough. The white metal details, including the bogie frames, are very accurate. The bogie frame tabs are a perfect match with the Kato bogie mortices, there's hardly any need for glue! Do note however that the instructions are in Japanese, fortunately illustrated by a fine exploded diagram which discloses all the secrets of what is at heart a very simple job. Once assembled, the railcar was given a coat of primer and painted. I glued some rhodoid glazing



from the inside. The body fits onto the Tomytec TM-21 driving chassis, to which it is fixed by

4 tiny screws supplied with the kit. I must still add a few figures and a driver ; given the power of the driving chassis, this railcar will easily haul a carriage and a van, bringing one of my layouts to life!

François Fontana

NARROW GARAGE

AVAILABLE FROM JELLYMODELS

jellymodels.com

PRICE: 51€

TOMYTEC TM-21 CHASSIS

PRICE: 37€

SCENERY AND SUPPLIES

JOSWOOD : CONTAINERS FOR YOUR PLATFORMS AND WAGONS

They are laser-cut, with ample detail and all they need is to be painted after having been easily assembled with wood glue. Two different types, with or without outside struts, available in two lengths, result in four different containers, enough to generate some diversity.

François Fontana



JOSWOOD

REF. 40178: THREE SMALL ONE WITH PLANKS

REF. 40179: TWO LONG ONE WITH PLANKS

REF. 40180: TWO SMALL ONES WITH FRAMES

REF. 40181: ONE LARGE ONE WITH FRAMES

<http://www.joswood-gmbh.de>

PRICE: 9.90€

TAMIYA : ULTRA-FAST POLYSTYRENE CEMENT

Tamiya has just released a new version of its ultra-fluid cement. Designated <<quick setting>>, it differs from its elder sister by its almost instant setting time. Position the parts to be assembled, let a drop run into the seam. By the time you remove the applicator, the adhesive has set! A must-have is you work with plastic sheet.

Eric Fresné



TAMIYA

EXTRA THIN CEMENT
QUICK SETTING

PRICE: CA. 4.50€

TRAMFABRIEK : NEW MOTORS FOR LILIPUT ENGINES

A small coreless motor, an adaptor to link the new motor shaft to the diameter of the original worm gear, a 3D printed cradle, you now have everything required to bring your ancient Lilliput U type 0-6-2 T or your even more ancient G. Thommen 0-6-0 T fully up to date. These models, designed a good 40 years ago, are as attractive as ever. The G. Thommen 0-6-0 T from the Liestal Waldenburgerbahn railway is even unique, as it never had any descendants, unlike the Austrian U type 0-6-2 T engines of which several generations were produced. All these locomotives share an out-of-date driving mechanism and poor slow running. Fortunately, Tramfabriek has stepped in and it takes just a few minutes to put the new motor in place, completely changing the behaviour of

the engine. In the next issue of Voie Libre, we will look in detail at this very simple job! There are remotorizing kits available for each generation of locomotive. The assembly instructions are available online at www.tramfabriek.nl/lilliput-u.html for a U-type 0-6-2 T for example.

François Fontana



TRAMFABRIEK

REF. (FOR THE U/UH 0-6-2 ENGINES) : LILOKU-1, LILOKU-2 AND LILOKU-3

REF. (FOR THE G. THOMMEN 0-6-0 T): THOMMEN

www.tramfabriek.nl

PRICE: 27.50€

What's New

BASE33-MAQUETTES : AMERICAN BUILDINGS

This newly-created artisan firm has released American buildings in the "Wild West" style: meaning, with wooden frameworks and board and batten cladding. They are small, and can easily fit into layout scenery. The main parts are cut and engraved out of 2mm thick plywood, while the doors, windows and shingles are cut out of thin coloured card. The kits are supplied with a concise assembly diagram that is very easily understood. Assembly calls on wood glue, and you can choose the colours you want for the structures. I began the job by applying colour to the various parts. First, I used water colours to permeate the top layer of plywood, then I painted the uprights and door and window frames with white acrylics, as this

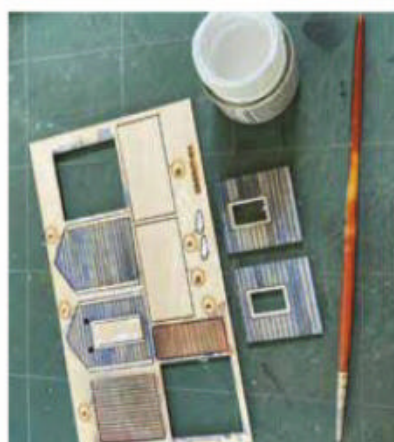
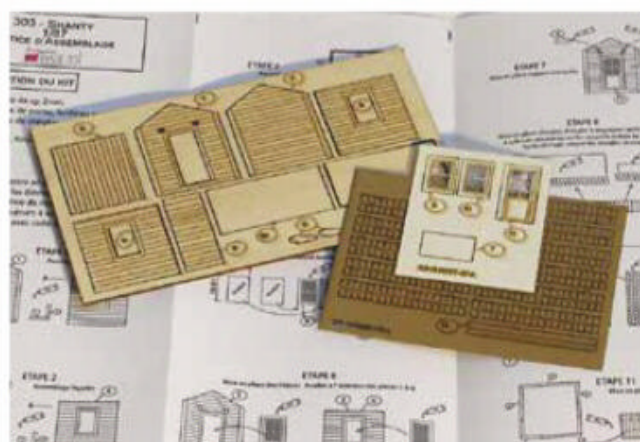
type of paint offers better coverage.

The parts are then removed from their frets and the laser-cut edges rubbed down, as there is always some black soot left-overs that are not conducive to proper adhesion. This building is pleasing to assemble, and so compact (33 x 33mm) that you can squeeze it in anywhere! The GCE Base33-Maquettes range is being expanded regularly. Take a look at the website.

François Fontana



BASE33-MAQUETTES / base33-maquettes.com / REF. SHANTY / PRICE: 22€



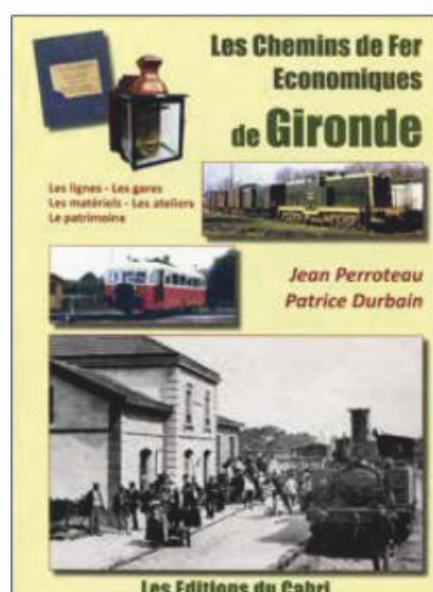
Book

À TRAVERS LA GIRONDE PAR LES ÉCONOMIQUES [ACROSS GIRONDE ON THE LIGHT RAILWAY]

Editions du Cabri have just published a book about the *Chemins de fer économiques de Gironde*, a standard gauge secondary railway network. The work of two local enthusiasts, this book is amply illustrated and blends local and railway history.

Eric Fresné

J. PERROTEAU AND P. DURBAIN
LES CHEMINS DE FER ÉCONOMIQUES
DE GIRONDE
PUBLISHED BY ÉDITIONS DU CABRI



256 PAGES, HARDBOUND
MANY ILLUSTRATIONS
www.cabri.fr
PRICE: 49€



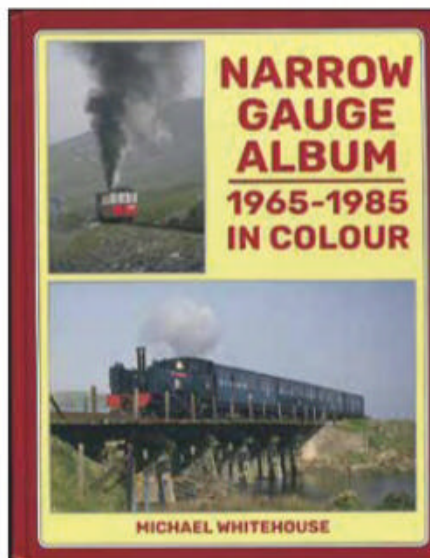
Book

NARROW GAUGE ALBUM, THE SEQUEL!

Continuing his memory work undertaken last year (see VL 97), Michael Whitehouse has re-immersed himself into his father's archives and come up with a second volume of his retrospective of British heritage railways. As was the case with the first volume, the book is lavishly illustrated. The period covered is logically more recent than in the first volume; the text is more largely based on the author's own memories. A pleasing book to browse through.

Eric Fresné

MICHAEL WHITEHOUSE
NARROW GAUGE ALBUM, 1965-1985 IN COLOUR
LIGHTMOOR PRESS
224 PAGES, A4 FORMAT, HARDBOUND
COLOUR ILLUSTRATIONS
www.lightmoor.co.uk
PRICE: 25€



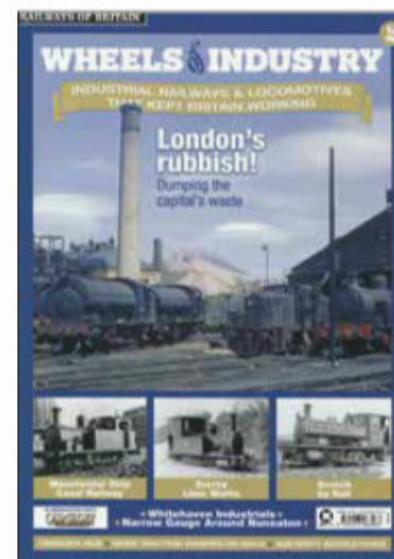
Book

FOR INDUSTRIAL RAILWAY FANS

Again written by Andrew Neale, volume 2 of the bookazine dedicated to British industrial railways has just been released. From the most conventional to the most bizarre, there is something for every taste here.

Eric Fresné

WHEELS OF INDUSTRY, VOL. 2
KELSEY MEDIA
WWW.KELSEY.CO.UK
PRICE: 8.99€



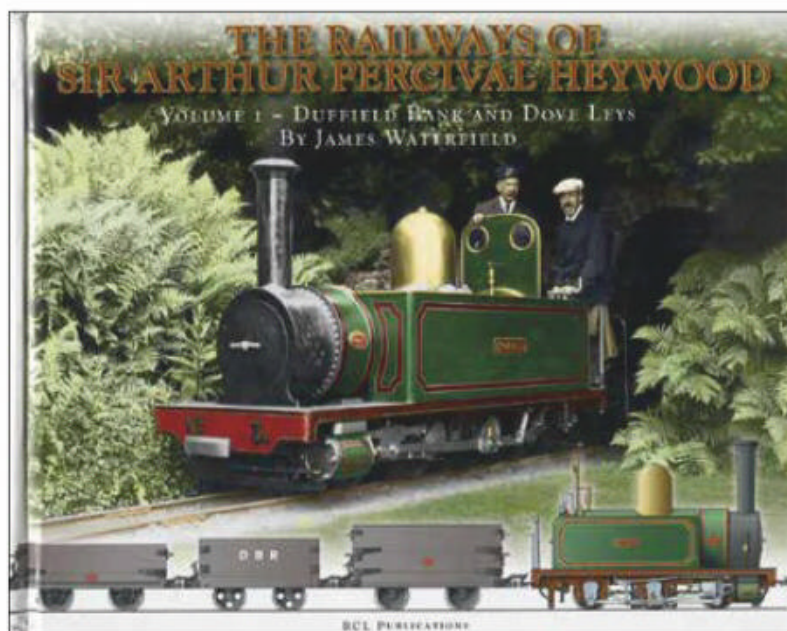
Book

SIR ARTHUR HEYWOOD AND 15" GAUGE TRACK

In the Victorian XIXth century, if you were a Baronet's son, university studies were out of the question, and technical studies even less so!

Sir Arthur Percival Heywood was unable therefore to join the prestigious Royal Corps of Engineers. His duty was to manage the family estates he inherited in 1897. Having kept and maintained his taste for technical matters, he decided from 1875 to build a narrow gauge railway around his Duffield Bank residence. But more than a simple railway, Arthur Heywood actually invented a complete 15 inch gauge system: self-locking sleepers, engines with radial axles, carriage bogies. Everything sprang from his own mind and almost everything was made on site in his own workshops. The story of the Heywood system was well worth a book, and even two as this is the first volume of what aims to be the definitive work on the subject...

Eric Fresné



JAMES WATERFIELD
THE RAILWAY OF SIR ARTHUR PERCIVAL HEYWOOD, VOL. 1
RCL PUBLICATIONS
324 PAGE, ITALIAN FORMAT, HARDBOUND
<https://narrowgaugeandindustrial.co.uk>
PRICE: 47.50€



What's New

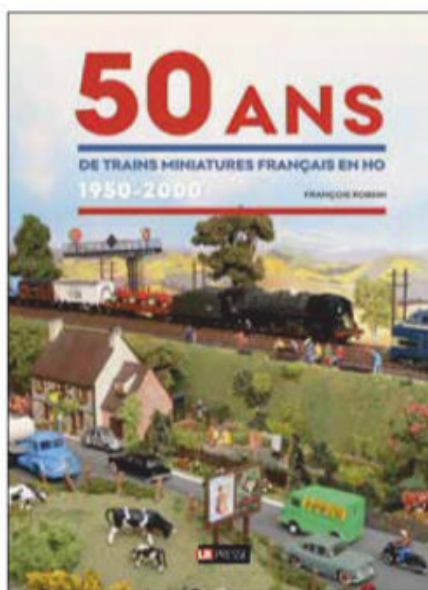
Book

50 ANS DE TRAINS MINIATURES EN FRANCE [50 YEARS OF MINIATURE TRAINS IN FRANCE]

François Robein is a familiar figure thanks to the many articles he has written about his passion for collecting miniature trains. In this splendid book, published by Editions LR Presse, he reviews, brand by brand, the entire production in 1/87 scale. A real treat! He doesn't restrict himself to the many French brands, but also studies a few European ones available on the French market during that half-century. A chapter is dedicated to figures, another to couplings... Narrow gauge fans will find a few nuggets here and there and in particular a fine presentation of the Jouef H0e range as well as of the ex-Egger-Bahn models distributed by Jouef.

As is customary, François Robein looks at period documents, at the boxes of the models, at the models themselves, but above all he re-creates superb scenes designed with the models and their contemporary accessories. This lavish staging is in itself a sufficient reason for buying the book!

François Fontana



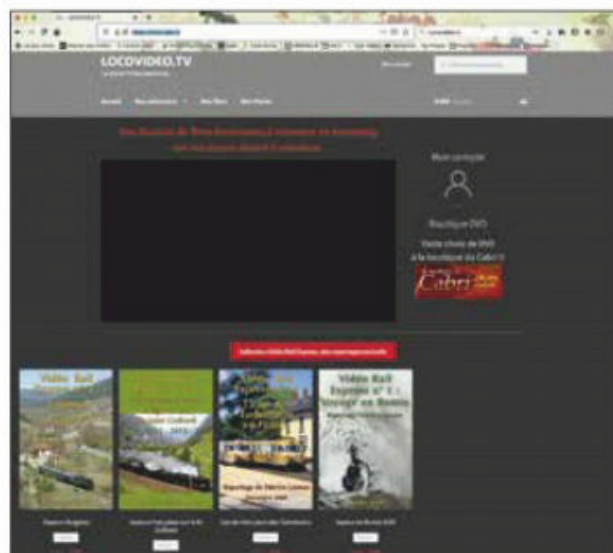
FRANÇOIS ROBEIN
50 ANS DE TRAINS MINIATURES EN FRANCE
[50 YEARS OF MINIATURE TRAINS IN FRANCE]
LR PRESSE
trains.lrpresse.com
320 PAGES, COULEUR, HARDBOUND
CODE TRFRANCAIS

Multimedia

RAILWAY STREAMING

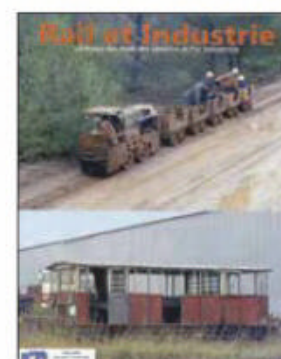
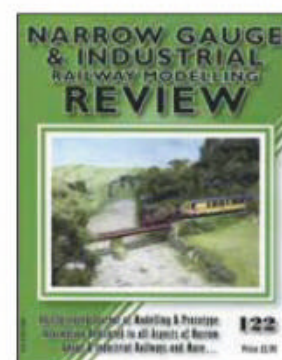
Broadband internet, connected TV sets and nomad screens are gradually pushing DVDs into the background, alongside the VHS videotapes that are now part of history. Editions du Cabri has seen the writing on the wall, and has launched Locovideo.tv, the first French railway streaming channel. The principle is simple. Simply open an account and rent, for a period of 21 days, whichever title catches your fancy. The entire video catalogue, past or present, of Editions du Cabri will be gradually placed online, together with features made specially for this new medium. A simple email address is sufficient to open an account, and pay-per-view is via bank card exclusively.

Eric Fresné



ÉDITIONS DU CABRI
<https://locovideo.fr>
PRICE: 4.95 TO 8.95€ PER FILM, OUTSIDE SPECIAL OFFERS

PRESS REVIEW



RAMMA/LRPRESSE CHALLENGE: “STAY AT HOME!”



For this new challenge, we suggest you build a diorama or a small layout inside or on an object that can found inside the home, such as a piece of furniture (night stand, etc.), a household or electronic appliance (mini-fridge, TV set, etc.) or other items (musical instrument, shoebox, etc.).

There are just 2 rules.

- Maximum dimensions must not exceed 80cm in width and 60cm in depth (if there is a fiddleyard, it's length must not exceed half the width chosen),
- The theme of the layout must have a direct relationship with the object on or in which the layout is built (cheeseworks for a raclette device, refrigerated warehouse for a fridge, etc.).

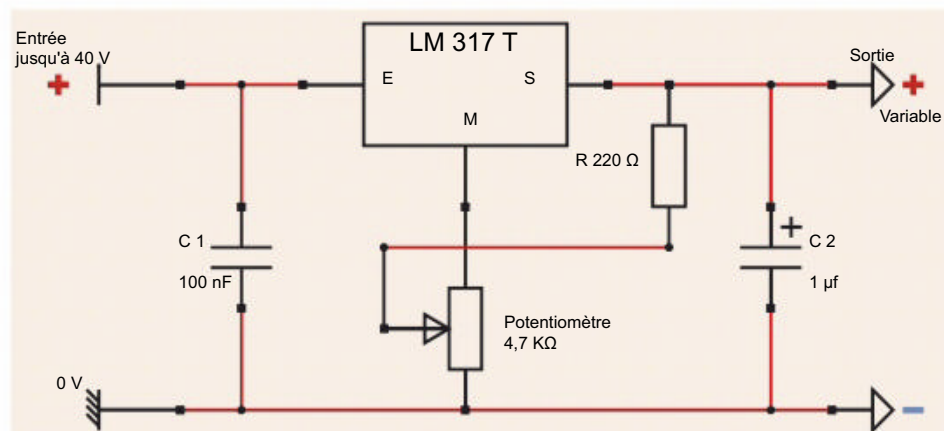
The scale and gauge are for you to choose. Have fun!



LOOKING BACK

POWERING THE LAYOUT SOME CLARIFICATIONS

Our dossier on power supply for layouts published in issue 101 of *Voie Libre* 101 generated many constructive remarks from our readers, and we thank them for their input. Firstly, to meet a number of requests, we publish the diagram of the power supply based on a LM317T regulator. Again regarding the LM317T, the Gaugemaster COMBI controller is built around a transistor whose casing is indentical to that of the LM317T unit. Coreless motors also gave rise to plenty of comments. According to several sources, a coreless motor is designed to withstand high frequency currents, in excess of 20 KHz. Finally, we must emphasize how much the power supply of our models has evolved over the last few years. Just 10 years ago, sophisticated power units supplied interrupted currents that were able to <<unstuck>> basic motors. Nowadays, the widespread use of coreless motors and the presence of on-board electronics in locomotives requires that recent models be powered by pure DC current.



Mining railway enthusiasts, **Rail & Industrie** has something for you in its issue 79. Pierre Ombrouck, a former employee of the company, makes a comprehensive presentation of the Berry diesel locomotives. Meanwhile, Louis Caillot has studied how they were used in the bauxite mines of the Var. While attempting to review the impact of the Covid-19 epidemic and of confinement measures on the world of railway preservation, **Voie Étroite** mentions the project of rebuilding a Decauville KE toastrack carriage in Sweden. When might such a project take shape in France? **Schmale Spuren** offers ample space in its pages to the FREMO modules. A concept that is growing increasingly popular in Central Europe among 0-16,5 enthusiasts. The **Narrow Gauge and Industrial Review**, on the other hand, seems to focus on exotic gauges, with a 1/43.5 scale layout in 17.5mm gauge and a locomotive construction project in 1/76 scale on 8mm gauge... Everything has to be scratchbuilt, but that is the price to pay for accurately modelling a specific gauge.

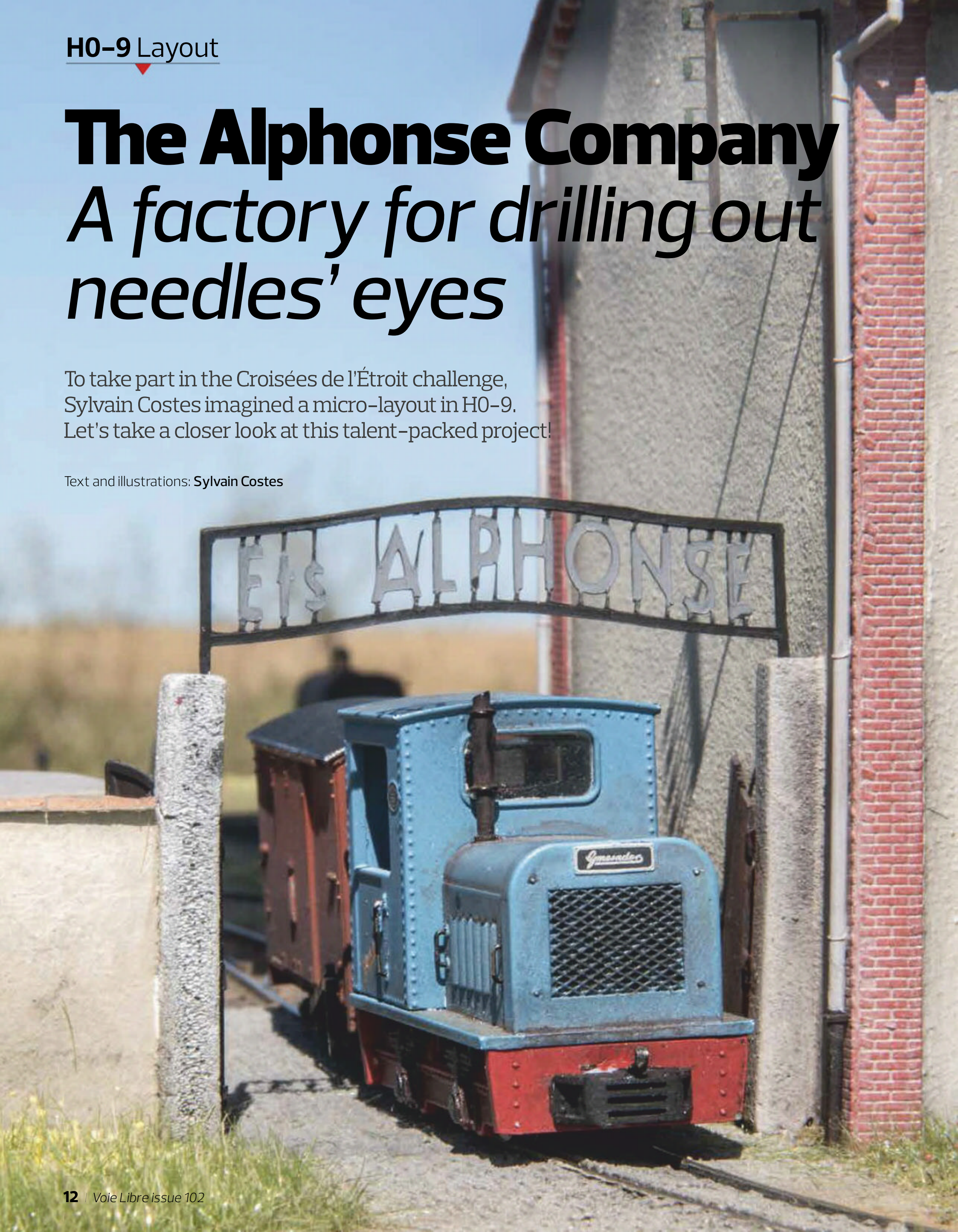
The Editorial Team

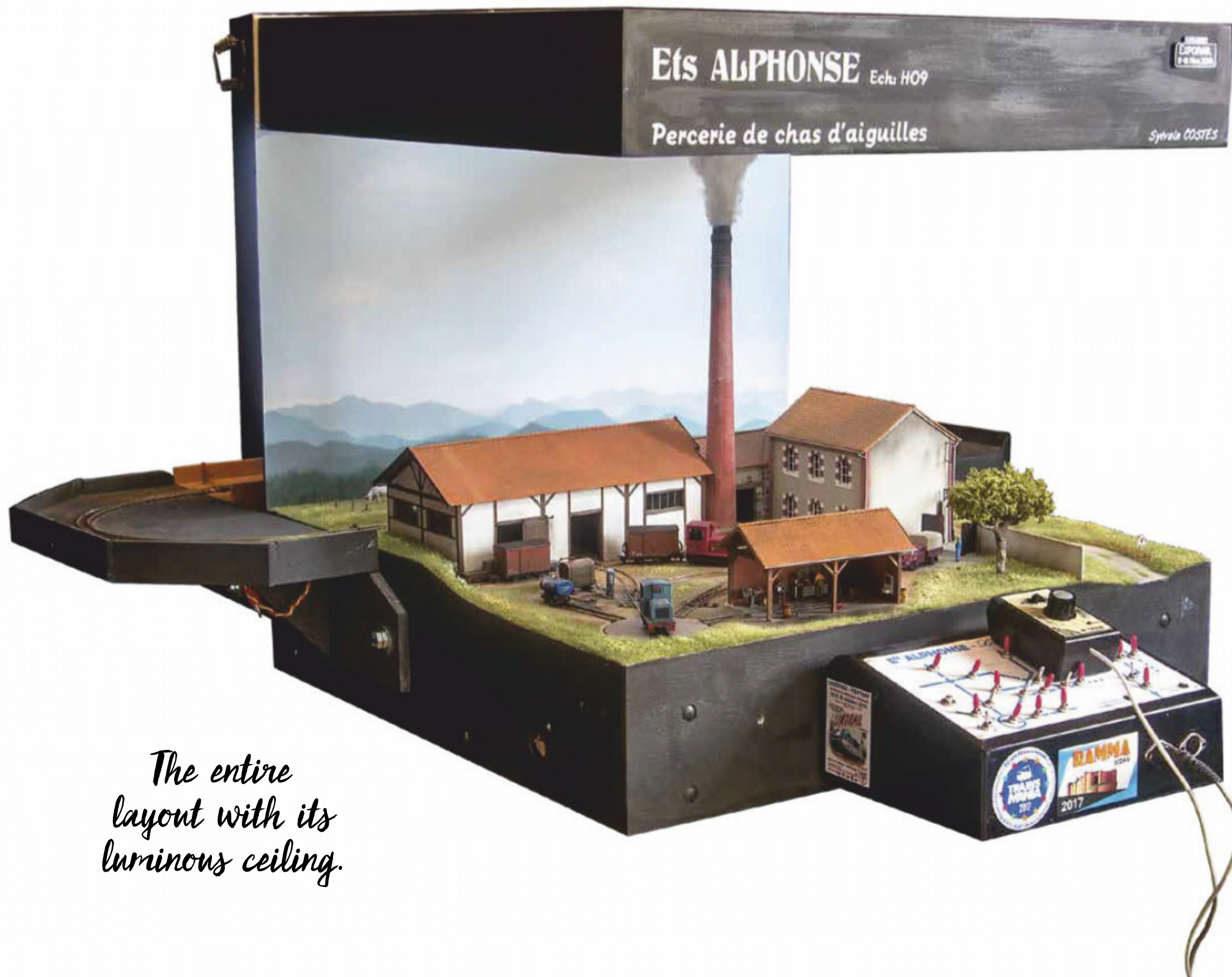
The Alphonse Company

A factory for drilling out needles' eyes

To take part in the Croisées de l'Étroit challenge, Sylvain Costes imagined a micro-layout in H0-9. Let's take a closer look at this talent-packed project!

Text and illustrations: Sylvain Costes





The entire layout with its luminous ceiling.

François Fontana: Sylvain, tell us the fabulous story of the Alphonse Company.

Sylvain Costes: The Alphonse Company is a small industry specialized in drilling out needles' eyes. Located in the hills overlooking the valley of the Garonne, at the foot of the Pyrenees, the factory is served by a short 60cm gauge line, built in the late 1930s when the phylloxera of the rubber tree ruined the economy of rubber, therefore of tyres, consequently preventing the growth of the road vehicle industry.

FF: If I remember correctly, this story of the phylloxera of the rubber tree was the fictional postulate upon which the *Croisées de l'Étroit* challenge was based?

SC: Indeed, this fantasy meant that all types of transport had to be carried out by

rail, due to the shortage of tyres. A kind of science-fiction for train lovers!

FF: Sorry for interrupting you, but thanks for this confirmation.

SC: Every day, two or three wagonloads of unprocessed needles are received at the factory, and the same number leave the premises loaded with drilled-out needles. The railway also moves a few coal skips, for the ancient steam engine that works the machine-tools, as well as tanks of fuel for the diesel shunting locomotives. From time to time, machine-tools, mechanical parts or logs for the forge are also delivered by rail. A passenger platform has even been built nearby for those workmen commuting to the factory by train.

Two Gmeinder diesel engines are in charge of the shunting movements on the complex trackplan. They are just powerful

enough to make it up the steep gradient leading to the factory gates.

FF: Frankly Sylvain, a factory for drilling out needles' eyes, how on earth did you come up with such an idea?

SC: The theme of the layout was inspired by a cartoon by Gotlib* illustrating weird jobs such as trombone clip bender, toothpaste tube filler or, precisely, driller of needles' eyes.

FF: So you forged ahead, as it were, to take part in the *Croisées de l'Étroit* challenge?

SC: It was Dany Machi's layout, which conformed to *Croisées de l'Étroit* standards, that prompted me to jump into the deep ■■■

* Translator's note: Marcel Gottlieb (artist's name Gotlib), 1934–2016, was a well-known French cartoonist.

H0-9 Layout

The layout at a glance

Scale: H0 (1/87)

Gauge: 9mm

Dimensions: 60 x 60cm

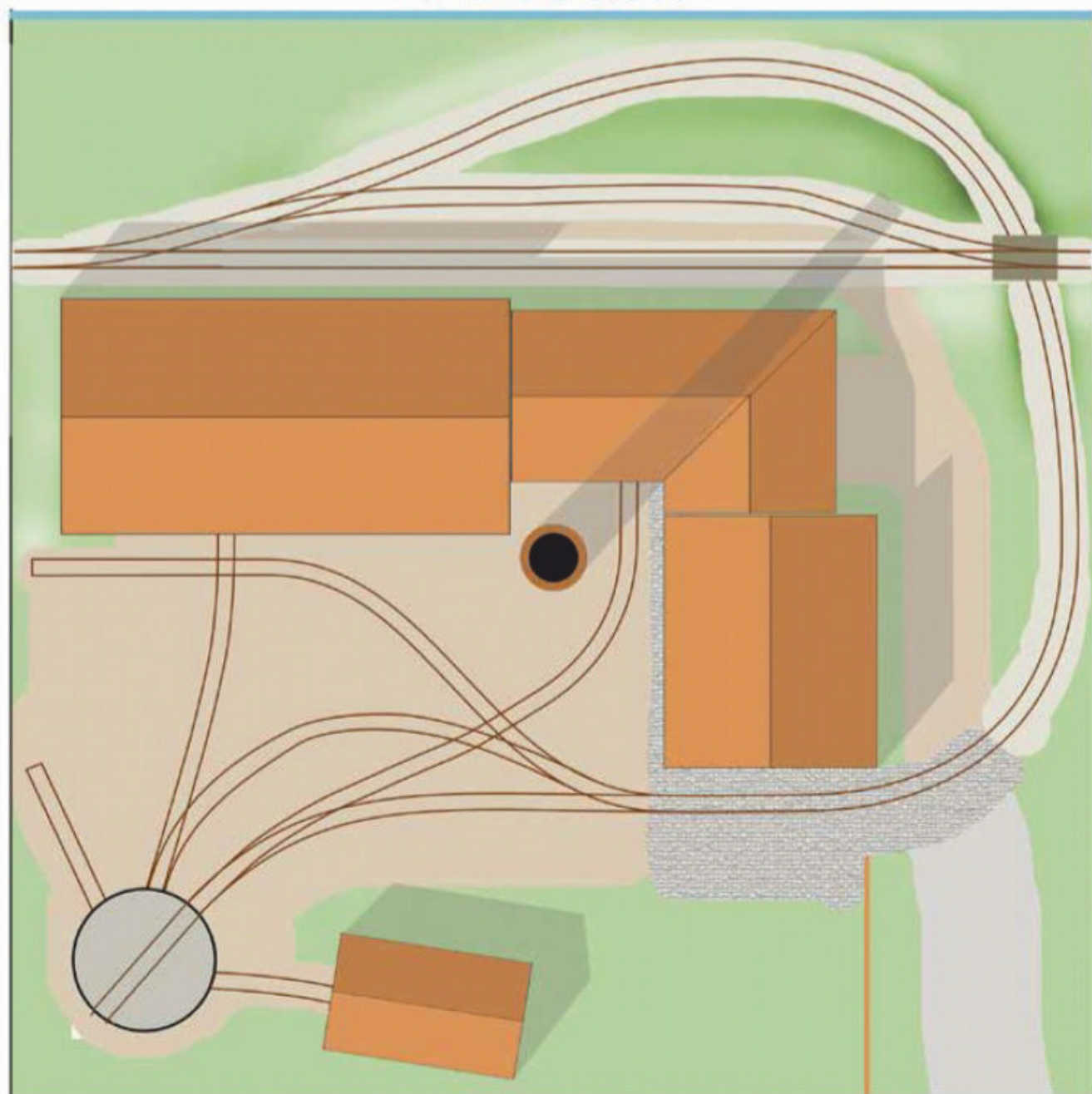
Control: analogue

Inspiration: industrial railway

Layout plan

60 cm

Fond de décor



60 cm

... end. I wanted to be able to connect my own layout to others, but also to operate it independently by adding fiddleyards. As for the layout's name, it refers to Marcel Aymé's *Contes du chat perché*** ["Tales of Playing Tag"], to which the layout alludes in many places.

FF: So, how does the Alphonse Company layout function?

SC: Although the baseboard is just 60 x 60cm, the layout is very solidly built out of 10mm thick plywood. Aluminium angle brackets located at each corner accommodate feet, cross-braced by flat strips of aluminium. Despite its small footprint, the layout is very stable!

FF: Tell us about the trackplan, it's just about as simple as it can get...!

SC: Complicating the trackplan was voluntary. Having attended various shows with a very simple layout, I discovered that operating it quickly became boring. So in this case, I opted to increase the scope for shunting movements to make operations more interesting. As the Peco 00-9 turnouts were too long for the cramped factory yard, they were assigned to the main track over which trains from adjacent layouts run, and which sometimes require impeccably laid track. For the factory sidings, I decided to scratchbuild all the turnouts, including the incredible double turnout-cum-double crossing, which was a major construction challenge. But once in place, it certainly looks impressive! The other parts call on Peco 00-9 track. The very steep gradient leading to the factory yard was another challenge. To determine

the maximum adhesion capabilities of my MinitrainS diesels, I used a length of track pinned to a board which I tilted more and more until the engine started slipping.

FF: You also installed an attractive little turntable?

SC: I cut the turntable out of a sheet of two-sided copper-clad epoxy. The rails were soldered onto one side, and the copper slit to avoid any shorting. The other side of the sheet is used for the electrical supply via two wipers, the current being routed to the rails through two wires running through the epoxy. The pivot is a brass tube soldered under the turntable, with a motor and gearing installed at the end. They are connected via a «cardan» consisting of several thicknesses of heat-shrink tube. A ball bearing is inserted into the baseboard to ensure smooth rotation. The corrugated

* Translator's note: "Chat perché" (playing tag) is phonetically almost identical to "chas perché" (drilled-out needle eye)



Marinette is waiting for Delphine to leave before moving in turn onto the private siding. The gradient is ultra-steep and on a curve! The track has to run below the station loop siding!

sheet metal on the surface of the turntable is plastic sheet, engraved using a Silhouette Portrait tracer; this ensured regular work.

FF: You also scratchbuilt the buildings?

SC: The factory consists of four buildings using different techniques. The heating plant is made of foamboard, in which I engraved the stones to simulate a construction made out of shingle from the Garonne river, which are widespread in the Comminges area. The administrative building is also made out of peeled foamboard, but the facings, overhanging cornices and window facings are made

out of bristol board, cut out with a tracer, and clad with laser-cut bricks from the Decapod range. The rendering is simulated by painting the walls with a foam roller loaded with paint that is hardly thinned.

I painted the sign with a stencil, also cut out with the tracer.

Building the workshop was more constraining. The structure is made out of foamboard, onto which the woodwork ■■■



Delphine leaves the factory with a train, and is about to run into the cutting leading to the main line.

Peco turnouts adapted to slow motors

As designed, the Peco turnouts are fitted with a spring that holds the point blades properly in place after they have been switched by the brand's solenoid motors. These springs become redundant when you use slow turnout motors, and even counter-productive as they prevent a smooth movement of the blades while placing undue stress on the motor.

Removing this spring is perfectly simple.

Start by removing the metal cover plate that holds the mechanism in place, by unfolding

the two metal tabs.

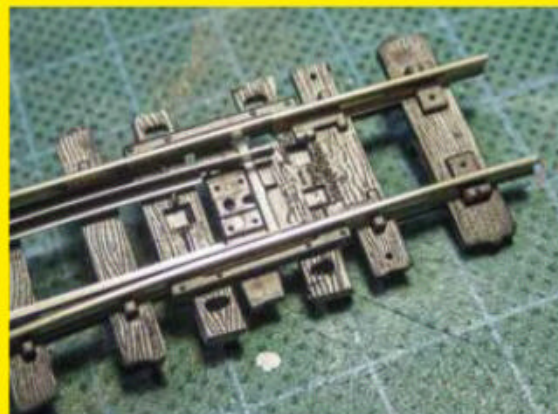
Once the spring is visible, grab it with fine-tipped pliers and remove it from its housing.

This spring, through its pressure, holds in place the tiebar and the blades, which tend thereafter to wobble about.

Simply add a small 0.75mm thick plastic wedge (or a piece of Evergreen ref. 133) glued against the side of the fixed sleeper.

This will restrict the amount of longitudinal play of the tiebar and the risk of things coming apart.

Text: **Sylvain Costes**





Large turntables were uncommon on real industrial railways. But this one is a real space-saver in the cramped factory yard.

A realistic coupling on the MinitrainS diesel locomotives

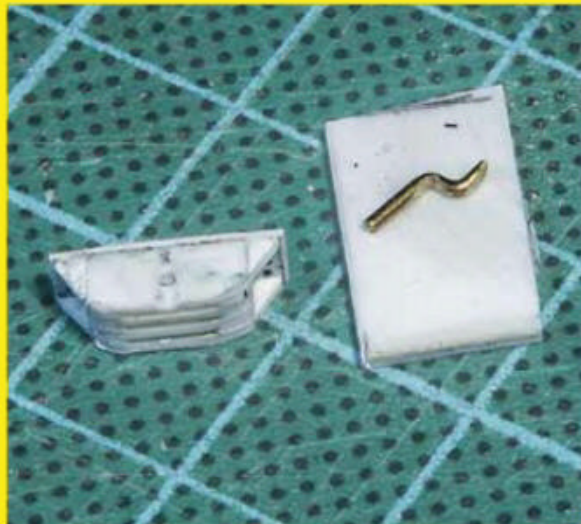
On my layout, the MinitrainS Gmeinder diesels are most efficient, but the very sharp curves do cause frequent derailments because of the rigid couplings.

The solution consisted in moving slightly forward the coupling shank. I took the opportunity to redesign the whole coupling to give it a more prototypical appearance.

The body of the coupling consists of stacked pieces of plastic sheet. A brass pin, bent into a handle-like shape, protrudes towards the front of the coupling and increases by 1mm the distance between the two vehicles.

This ensures a better articulation and has put an end to derailments on tight curves.

Text: **Sylvain Costes**



■■■ (Evergreen strips 2.5mm thick) was glued. I then filled in the masonry parts by pouring a fairly liquid blend of plaster, paint and wood glue between the woodwork. The rendering aspect is strikingly realistic, but the building is also fragile and using this technique is also rather tedious.

The roofs are a hotchpotch of Roman and mechanical tiles, as is often the case in this region. The former are Redutex textures, the latter are from the Decapod range. All are repainted in the «orange tile» shade from the Decapod range.

All the framework in the diesel locomotive workshop is made out of Evergreen strips, while the hollow brick walls are etched brass sheets from the Decapod range, like the white metal ridge tiles.

FF: How did you make the ground cover?

SC: The ground is treated in a very classical way. The relief, made out of tiling glue coloured brown, is first covered with sifted earth, then sprinkled with fine moss flock, before the Mininatur fibres are applied with an electrostatic applicator. The areas without vegetation are covered with



The wood for the forge is well sheltered, while Delphine shunts in the yard.



The station of La Serre-de-Villeneuve - Menos is a very basic facility! Here is Marinette. Each diesel loco has a name.

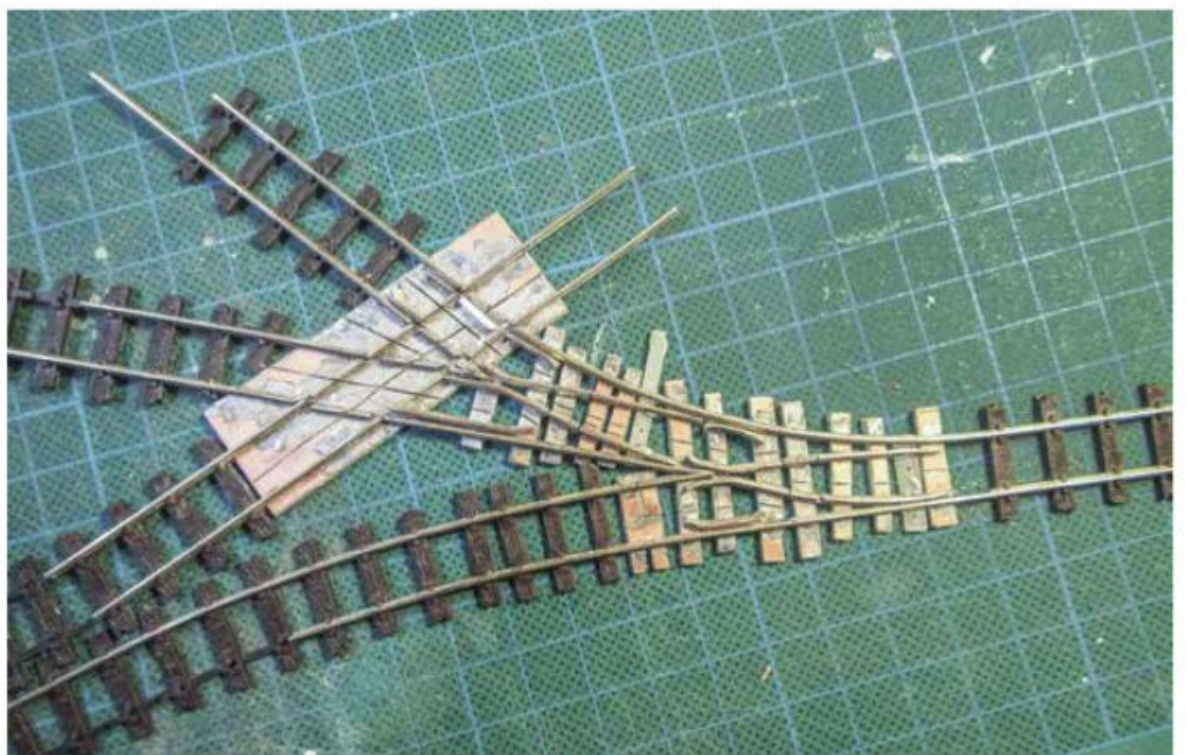
LDP (Le Décor Principalement) sand dyed with pastels. The very fine tree is from the Arboris Miniature range.

FF: How about operations?

SC: On the technical side, the layout runs on 12V DC provided by a hand-held Gaugemaster controller. To be able to run several locomotives, all the track sections can be isolated thanks to switches arranged on a mimic control panel. The turnouts are motorized with MP1 units from the MTB range, they work very smoothly. However, because of the complexity of the layout, the wiring is complex also, and I used no less than 50 metres of wire to complete the job. Not bad for a layout with a surface of 0.36 m2!

FF: You did build a fine ceiling for your layout...

SC: To be compatible with the *Croisées de l'Étroit*, the layout must be visible from all 4 sides. However, in shows, the lighting is often weak and orange-shaded, spoiling the colours and therefore all the modeller's work. I added a strip of pure white LEDs, reminiscent of daylight, in a lid above the layout. It is supported by a hollow threaded rod through which the light wire is routed. The smokestack (Kibri) and its smoke, made out of anorak stuffing fibre, cleverly conceal the threaded rod, giving the impression that the ceiling floats freely in the air. When the layout isn't connected to others, I install a painted backdrop evoking the Pyrenees range visible from the foothills, as well as a looped fiddleyard. ■■■



Here is Delphine again, just outside the factory. The double turnout combined with a double crossing is a mind-boggling piece of trackwork! While on this subject, here is an example of turnout construction. They are built at the workbench before being installed on the layout.

H0-9 Layout



Marinette at the fueling point.



The diesel engine workshop is fully equipped for all types of maintenance. In the old days, a steam locomotive was kept here.

--- **FF: What type of stock runs on your layout?**

SC: The 4-wheeler MinitrainS diesels run beautifully and manage to climb the steep gradient. Skips from the same manufacturer are in charge of carrying goods, together with Peco box vans.

All this stock has been repainted in the colours of the companies that might have operated this line if it had really existed, and is weathered. This dive into the world of narrow gauge was a first for me. Even if I go back to more

“serious” standard gauge “main line” layout projects, I have an idea in mind for a Mediterranean harbour that would be eminently suited to narrow gauge! ■



Delphine emerges from the cutting before running into the factory yard. Despite the shortage of road traffic, roads are well maintained in order to preserve bad quality tyres!

Let's talk CFD !

The release of the Billard A 80D railcar and goods wagons produced by REE prompted us to take a closer look at the CFD, to help our readers create fine showcases for these eagerly expected vehicles!

THE REE BILLARD A 80D RAILCAR IN 1/87 SCALE	20
CFD WAGONS, A WINNING TRIO...	22
THE REE CFD WAGONS IN 1/87 SCALE	26
A STATION BUILDING WITH SEMI- DETACHED GOODS SHED BY ARCHITECTURE et PASSION.....	28
COMMENT IMPLANTER UNE GARE CFD.....	32

Pont de la Balme
layout by François
Fouger.



N° 316 in CFV livery.

BILLARD A 80D RAILCAR BY REE IN 1/87

This model is the outcome of lengthy and meticulous work, a slow succession of stages, blending technical and creative phases. We have before our eyes a small Billard A 80D railcar in 1/87 scale, designed to run on 9 and 12mm gauge tracks.

Text and photos:
François Fontana

THE MODEL AT A GLANCE

Manufacturer: REE

Les secondaires

Scale: 1/87

Gauge: 12 and 9mm

Prototypes: wide-bodied A 80 D railcar

Recommended price:

258€ DCC sound version,

165 € analogue version

As is customary with other REE productions, nothing has been left to chance on this technology-packed model. Benoît, its designer, reviews it for us.

FINE BODY...

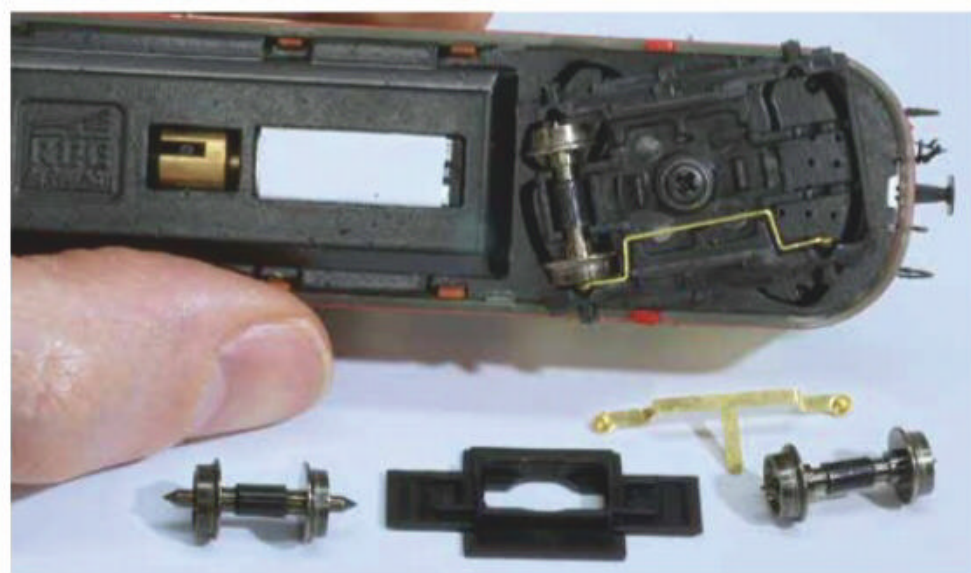
In real life, this machine is highly curvaceous. Its windows are almost flush and the front ones feature polished metal frames, whereas there are none on the side windows. The roof consists of a series of arcs and riveted seam covers, with horns, ventilators and an exhaust pipe emerging from it. To record the smallest curve of this body, a high definition scanner is the most suitable tool in our digital day and age. Accurate to within 3 thousandths of a millimetre over a distance of 30 metres, and when scaled down 87 times, this leaves little room for mistakes. Especially as this first sketch is combined with studying many photographs, many drawings and a

careful review of the preserved units. The manufacturer opted for a plastic body made of transparent injected plastic, a more complex approach. Once removed from the mold, it is given a first coat of green paint from the outside, and after having masked the glazing. In this way, when looking through the windows, the inside of the body is pale green, as per the prototype. The ruby red, pearl grey or red and cream shades of the various liveries are then applied. Then come the window frames and the markings. A bank of diodes and its two tiny connectors is fitted to the roof of the passenger compartment. The horns, ventilators, exhaust pipe, lamps and other details are the last items to be added.

FINE CHASSIS

This body clicks onto a cast metal chassis whose weight ensures good hauling power and good electrical pickup. The Motraxx motor, fitted with a

The three parts clip together. The centrally-mounted motor drives the carrying bogie via a cardan shaft. The Zimo electronic board is held in place by two screws.



A simple keeper plate clipped under the bogie holds the axles bearings in place. Re-gauging is child's play!

flywheel, drives what is actually the carrying bogie, via a long transmission shaft. This means that the carrying bogie is the driving bogie, and vice versa – oddly, but for reasons relating to scaling the rail-car down to 1/87. On the motor compartment side, an electronic board, designed and made by Zimo, carries the sound decoder, the powerpack and all the electronic systems that manage this small rail-car. The loud-speaker fits into a recess in the metal chassis. Electrical connections are via simple spring contacts, no more loose wires between the various sub-assemblies!

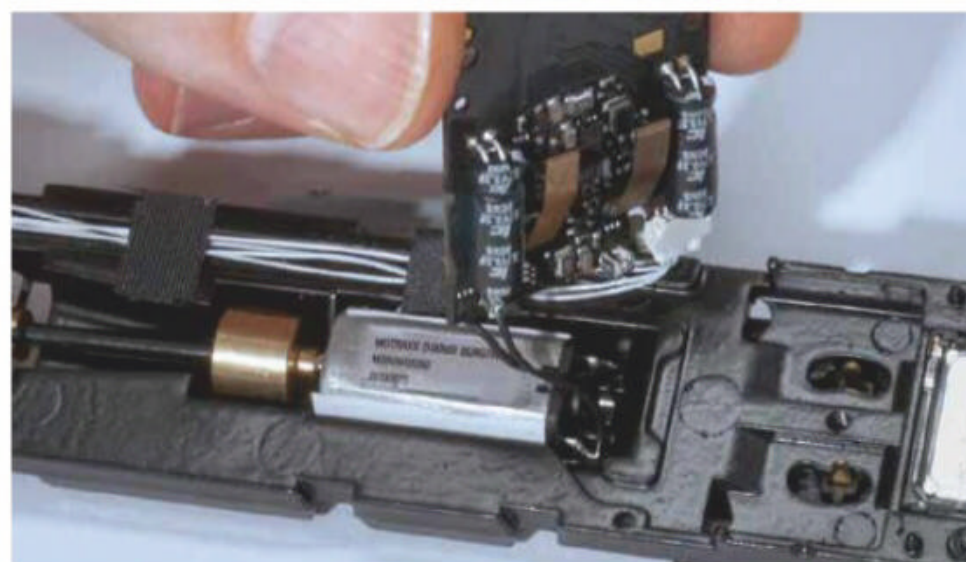
A mock floor covers the chassis, and the railcar features inside furnishings consisting of seats, the two driving positions, the partition between the motor and passenger compartments and the engine bonnet.

MISLEADING BOGIES!

As indicated above, the driving bogie on the model is what is actually the carrying bogie on the prototype. This is somewhat misleading... The electrical pickup is brilliant, two brass parts act as bearings, pick-ups and electrical connectors, all in one. The wheels are fitted to shouldered half-axles connected by a plastic ring that carries the gear on the motor side!



The body, made of transparent injected plastic, is first painted green to represent the inside colour. It is also fitted with a bank of LEDs for the roof lighting.



Under the electronics, the loud speaker. The two tabs that carry the current appear in the bean shaped holes drilled in the chassis.

IT RUNS

And beautifully! Incredible slow running, ample haulage power, well beyond what is required from this small machine. And swapping the driving and carrying bogies means that it can handle 22.5cm radius curves! The sound, recorded on the rail-car preserved on the Voies Ferrées du Velay line, is amazing – just like being on site in the mountains! In analogue mode, the passenger compartment remains lit thanks to the powerpack, but not the headlights... Impressive! The model is supplied with a set of 9mm gauge axles. To put them in place, simply remove a clip-on keeper plate, and hey presto. The railcar also features two buffers fitted with coupling loops and pins.

A WIDE RANGE, SOON AVAILABLE

The first series will comprise four references, numbers 313, 314 in CFD livery and N° 316 in two CFV (preserved) versions. The recommended price is 258€ in DCC sound version and 165€ in analogue version. The models are expected to be with the retailers in the second half of September.

The models photographed are pre-run prototypes, all the components are not final.

FLAT, OPEN, BOX VAN **The Holy Trinity of secondary railways**

Why is it that goods wagons on secondary railways are so uniform and lacking in variety? *Voie Libre* tries to explain.

Text: **Éric Fresné**

Photos: **Damien Letondal** and **Gauthier Souvignet** collection

In the 1860s, the question of the nature and organization of secondary railways was still actively discussed within French railway circles. The Society of Civil Engineers (S.I.C. in the French acronym), in particular, focussed on the problem. The minutes of its meetings are packed with statements dealing with this topic. In 1870, Émile Level, a member of the S.I.C., published what purported to



Tence station in 1961, a complete goods consist with the CFD winning trio : box van, open wagon, flat wagon.



DR, coll. G. Souvignat

At Le Chambon-sur-Lignon, a string of box vans with curved roofs and of open wagons with sheet supporting bar in folded position. The CFDB BB 400 diesel engine at the front of the train is part of the H0m programme announced by REE.

be a practical treatise on the construction of local light railways. This was a vast and comprehensive piece of work, and took into account the outcome of those discussions. It dealt with two, closely related, questions, both of which would be of fundamental importance for the history of French local light railways [*Voies ferrées d'Intérêt local* or VFIL]: track gauge and transshipment. These questions were the subject of much argument, and Level dedicated the fourth part of his book to them.

SIMPLE AND ALL-PURPOSE WAGONS

Level is clearly a supporter of narrow gauge, not yet known at the time as “metre gauge”. But using narrow gauge means that goods have to change trains when meeting standard gauge lines: this is transshipment. Because of this feature, most of

the goods have to be loaded and unloaded by hand. Note that the labour available and the salary levels in those days meant that tree trunks or a full tumbril of stones could be transshipped! On the basis of the most common types of goods wagons found on main line railway companies, Level therefore defined the 3 types of wagons that would become the most widespread on the VFIL networks.

The first type was the box van. They were designed to carry products that had to be protected from rain and sun, and in some cases livestock. Open wagons were used to carry bulk goods (coal, stone, limestone...). They could be fitted with a tarpaulin. Flat wagons, finally, were used to carry large bulky items such as cut stone. All these wagons had to be able to carry a 10 metric ton load, corresponding to what standard gauge wagons could also carry. ■■■



A flat wagon with one of its sides dropped, seen at Saint-Agrève in 1968.



An open wagon seen at Saint-Agrève in 1970.



A box van in Tence station in 1959.

DR, coll. G. Souvignat



D. Letondal

Chemin de fer du Vivarais 2012: paint fades faster on wood than on metal! Fine weathering for this brown/red liveried wagon, with black metal work.



The Chemin de fer du Vivarais in 2012, a grey box van with black metal work. A fine example for weathering.

FROM THEORY TO PRACTICALITIES

In the 1880s, most companies applied the principles set out by Level a decade earlier. Such was the case of the Compagnie de Chemins de Fer Départementaux (C.F.D.). Founded in 1880 by the French Crédit Foncier bank, in partnership with Belgian banks, the CFD soon built up a small «secondary» railway empire with a total mileage of up to 3000km of metre gauge track. The wagons it used on these networks belonged to the 3 types defined by Level. After introducing a few disparate series, it even decided to standardize its goods wagons.

All these wagons called upon the same chassis designed for a 10 metric ton load, with a 2.57m wheelbase. Several manufacturers built them over the years: De Dietrich, ANF Blanc-Misseron, Decauville and finally the Ateliers de Marly with a few variations in the design of the box vans, some having a curved roof and others a two-sided roof.

NO TANK WAGONS ON SECONDARY RAILWAYS ?

At the time the VFIL were born, using tank wagons was far from widespread. This happened much later, after 1918 and mainly as block trains to or from the main industrial centres. It is therefore not surprising that Level “forgot” this category when writing his treatise. Furthermore, the requirement to transship between gauges would have required transfer facilities in each exchange station, something not conducive to economical operations. So, no tank wagons were to be found on secondary railways...

Tence 1958, a string of box vans from different systems and different builders, with roofs of two types.





Seen in Montfaucon station in 2012, a box van in CFD grey livery with black metal work.



A series of preserved box vans at the *Chemin de Fer de la Baie de Somme* in 2007. Note the colours of the wagons awaiting restoration and the fine original brown-red livery, with black metal work, of the beautifully restored wagon.



DR, coll. G. Souvignat

NUMBERS AND LETTERS

Standard box vans were identified by the letter K followed by a number in the 4,000 series. Open wagons were identified by the letter G and numbered in the 5,000 series, while flat wagons were lettered H and numbered in the 6,000 series. The CFD company did add a fourth type of wagon that Level had not thought of. This was a type of flat wagon fitted with swivelling bolsters, lettered Ht. Designed to run in pairs, they would carry long loads such as tree trunks. While on the subject of markings, the wagons fitted with hand brakes only were identified by the letter f, and by the letter v for those fitted with the Clayton vacuum brake. The letter i meant that a step ran all along the length of some box vans.

The appearance of the CFD goods stock did not vary much over time. Two box vans were converted into temperature-controlled milk vans on the Charentes network, and a few flat wagons were modified to carry UFR road trailers on the Vivarais. This can give you some ideas for converting your REE wagons...

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A splendid original livery, grey with black metalwork!

THE REE CFD WAGONS IN 1/87 SCALE

They had been announced long ago, the epidemic delayed them but here they are at last. Already available in many versions, the trio of REE CFD wagons in 1/87 scale has everything going for it!

Texte et photos :
François Fontana
et François Fouger

THE MODEL AT A GLANCE

Manufacturer : REE les
secondaires

Scale: H0 1/87

Gauge: 12 and 9 mm

Prototypes: CFD wagons

Recommended price: 59.90€
for a set of two wagons

Quality engraving, fine running qualities, perfect decoration... there's no shortage of superlatives to describe these small wagons. To be sure, they are going to find their way onto many a layout. Compare the scale models with pictures of the prototypes, it won't take much to convince you how accurately they have been reproduced and painted. If something must be criticized, these wagons are perhaps a trifle too neat and clean, so some light or even heavy weathering would bring them fully to life.

CONSTRUCTION PRINCIPLE

The body is made of injected plastic, the chassis of metal. The models feature a few brass or plastic add-on parts. Each wagon is supplied with a pair

of 9mm gauge axles... Nothing is left to chance. For instance, the brake shoes must be fitted by the buyer, depending on the gauge chosen. We do have one reservation, however: the coupling system, although of the loop and pin type on the central buffers, remains proprietary. Fitted in lieu of the original central buffer, it is higher than the standardized couplings in H0-12 and H0-9. Modellers wishing to mix brands will therefore have to make some adjustments!

VARIATIONS

As per the prototypes, all the wagons have the same chassis, to which – for the time being – four different bodies are fitted. But there's no need to be clairvoyant to guess that other types of bodies will be produced in the future! And each of the available



A fitted flat wagon with CFC markings.



My favourite version: an open wagon with a sheet supporting bar.

The models photographed are pre-run prototypes, all the components are not final.



Brown-red livery for the wagons of the Corsican railways, which shall include box vans marked ORREZA or MATTEI.

bodies is supplied in a wide range of decorations and liveries. Alongside the grey with black metalwork and all-grey CFD versions, REE has also released brown-red versions from the Corsican railways (CFC), together with box vans from the same railway marked OREZZA and MATTEI.

These different liveries apply to the three types of wagons: box vans, open and flat. There are also two types of open wagon, as each set comprises one normal open wagon and one gable-ended one, with its sheet supporting bar in folded position. There is also variety in the sets of flat wagons: a few references have no brakes. I cannot wait to enjoy the variety of trains soon to be seen!



With the wagon upside down, let's take a look at the cast metal chassis. Besides the cast couplings, the brake cylinder and the steps are add-on parts. Note the apertures to accommodate the wheels, and the various holes for fitting the brake shoes. This OREZZA box van is fitted with 9mm gauge axles.

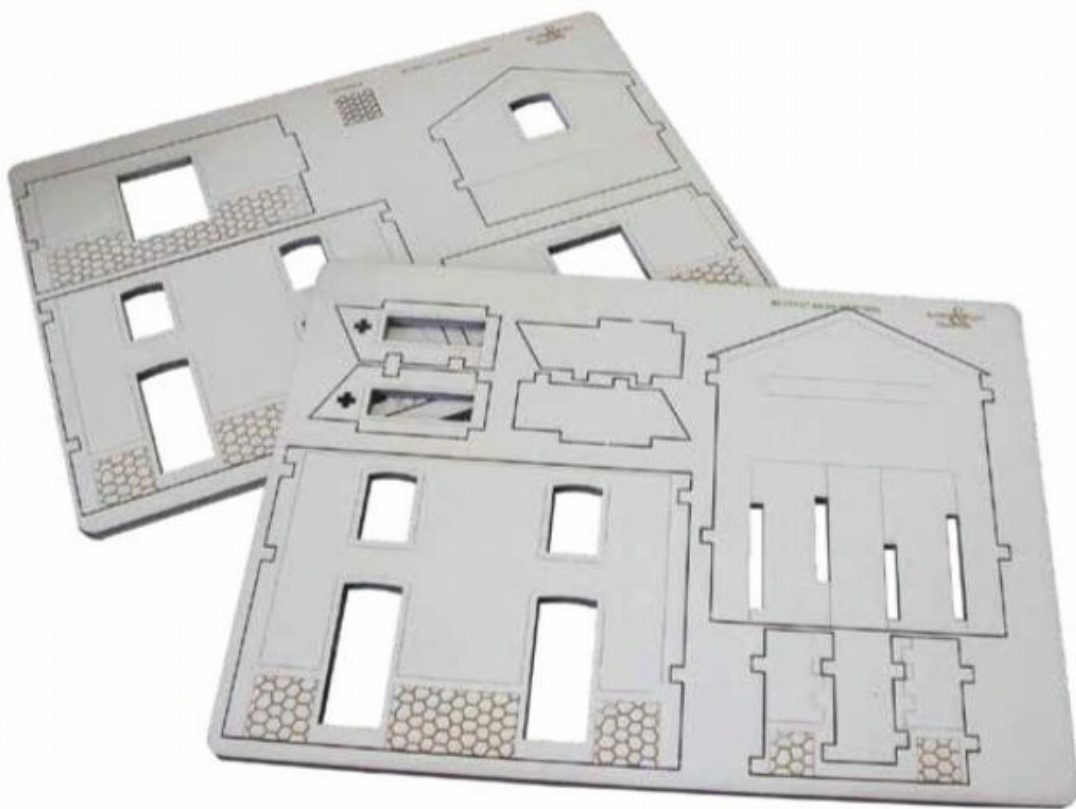
A STATION *for your Billard*

The imminent release by REE of the Billard railcar and CFD wagons is enough to prompt an urge for an H0m layout. An opportunity for Voie Libre to suggest building an Architecture & Passion kit of a CFD station, and in a second article, to help you install it in a realistic manner.

Text and illustrations (unless otherwise mentioned): **Éric Fresné**



The CFD station building, an ideal backdrop for a Billard A 80 D railcar.



1 The first phase consists in applying primer to all the wall and facing parts. I used a spray can of Gesso, which gives some grain and greatly helps the acrylic paint to hold on the card. While the parts are still on their frets, I also spray a coat of black acrylic paint on the inside of the walls.

The first laser-cut kits appeared on the market just over 10 years ago, and they were truly revolutionary. Card kits cut out flat and assembled with white glue made an impressive comeback. This also provided an opportunity for artisans to create very extensive ranges, as this technology permits production in small runs or even unitary kits. The Architecture & Passion catalogue, for example, contains several dozen references, including CFD buildings of course. I opted for a type A station building with semi-detached goods shed and high platform, as indicated in the CFD nomenclature. The kit cost me 89 euros, plus postage.

TRUE KIT OR «SCRATCH AID» KIT ?

Once the parcel was opened, I found myself with high-quality card parts of various thicknesses, together with instructions showing the main phases of assembly. However, simply assembling such a kit is not sufficient. If you want the result to meet your expectations, you must plan some careful decoration work on all the parts, from painting to weathering.

Likewise, and this is the case for most laser-cut products, detailing parts such as ridge tiles or gutters are sometimes not very realistic, or altogether missing. You

will need to source them from elsewhere or scratch-build them. This is what I did using 3D printing. So, rather than talk of a kit, I would rather borrow the English expression «scratch aid» kit, where part of the work and the standard of finish are left to the modeller's initiative. It is worth noting that Architecture & Passion has a range called «Easy déco» for which the decoration work is made easier through the systematic use of coloured card. In any case, the laser cutting leaves no nasty surprises at the assembly stage, the latter representing roughly 20 % of the overall construction time required.

DECORATING, THE BIG JOB...

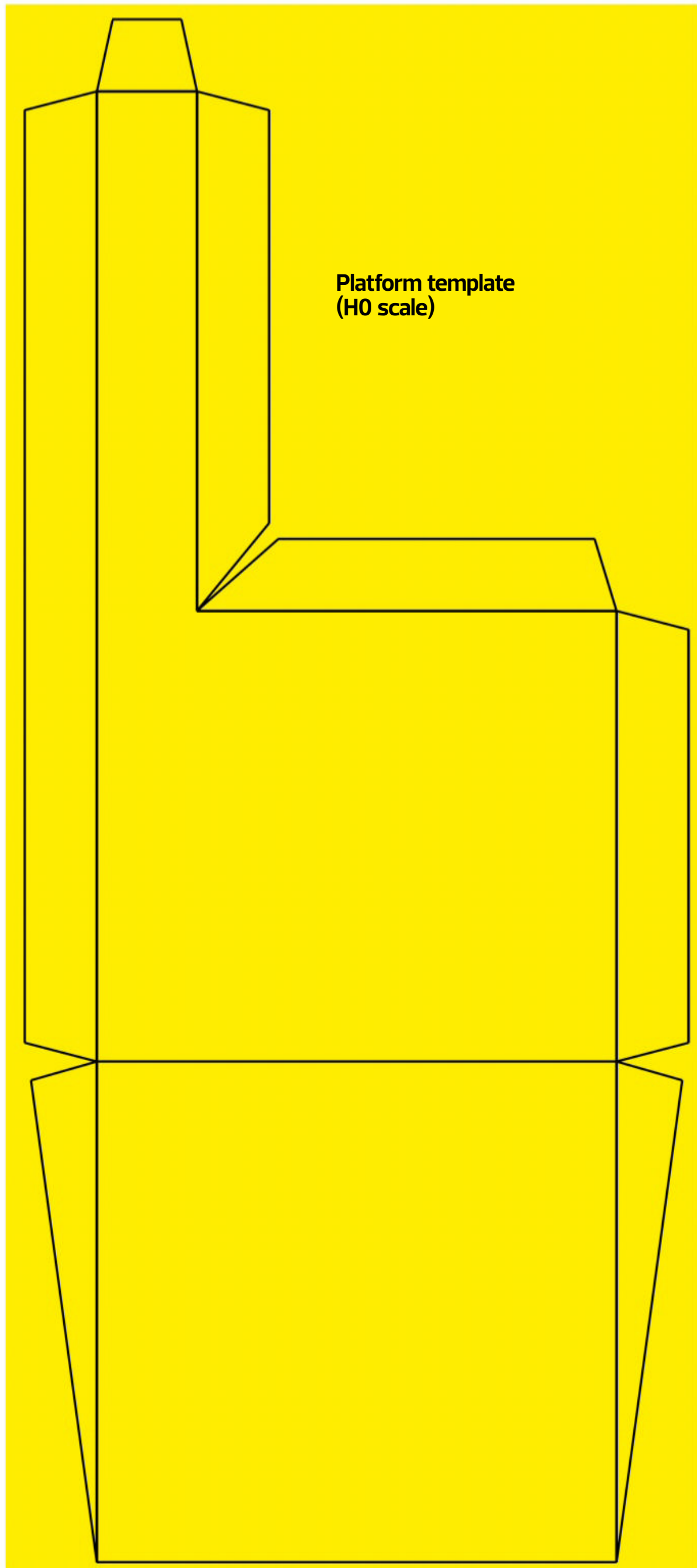
The advantage of card is that it is easy to decorate with acrylic paint. I use both products in tubes designed for artists or in jars for modellers, which I choose in the Liquitex Heavy Body and Prince August ranges for their covering qualities and resistance over time. Applying paint to paper and card is not very difficult. I decided to do as much work as possible with the parts still attached to their frets. I also bought a few additional products from graphic arts stores. The remainder of this article will show you the main stages of the decoration work. ■



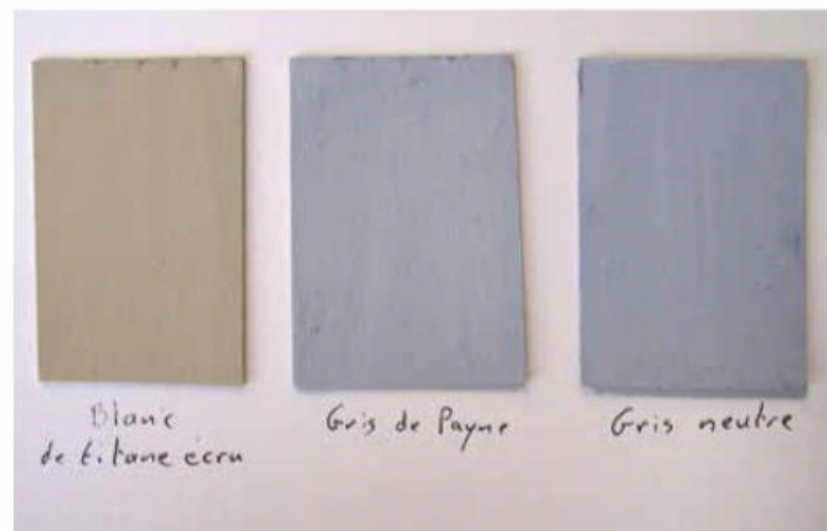
GESSO IN AN AEROSOL!

Widely used for coating and preparing surfaces, Gesso is a mineral coating medium that makes porous materials waterproof (in particular paper and card, to which it adds rigidity), and also improves the holding of paint on many varieties of materials. We had become accustomed to use it in paste form. For ca. 10 euros in graphic arts stores, this product is now available in aerosol cans sold by Odif. It was Frédéric Ferrand, on the Voie Libre forum, who pointed out this new possibility. According to the instructions, Gesso in

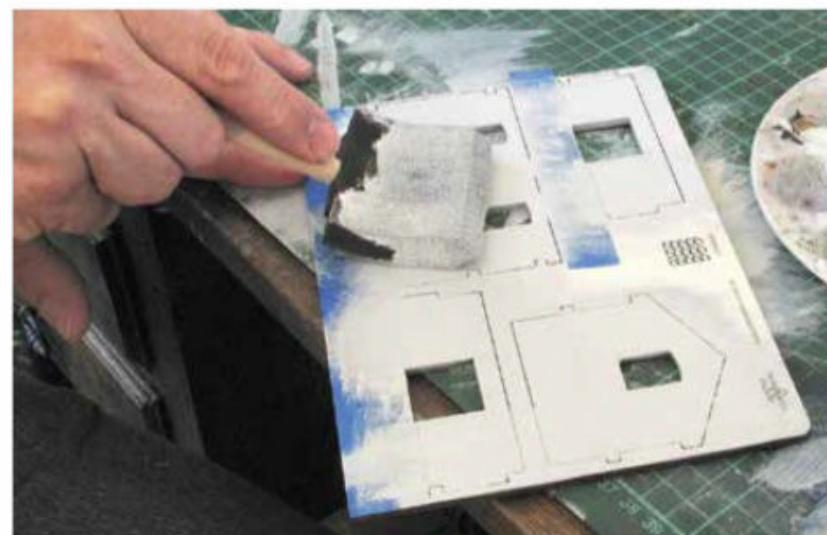
aerosol form can be applied equally well to paper and its derivatives as well as to wood, plaster, aluminium and even polystyrene. Tested on the card of the Architecture & Passion kit, it provides a fine, smooth and matt coat without clogging the engraving lines. Acrylic paint holds perfectly on this undercoat and offers a far better finish than when applied directly to the card. This Gesso in aerosol form also exists in black. In my view, this is an essential product for scenery and building construction.



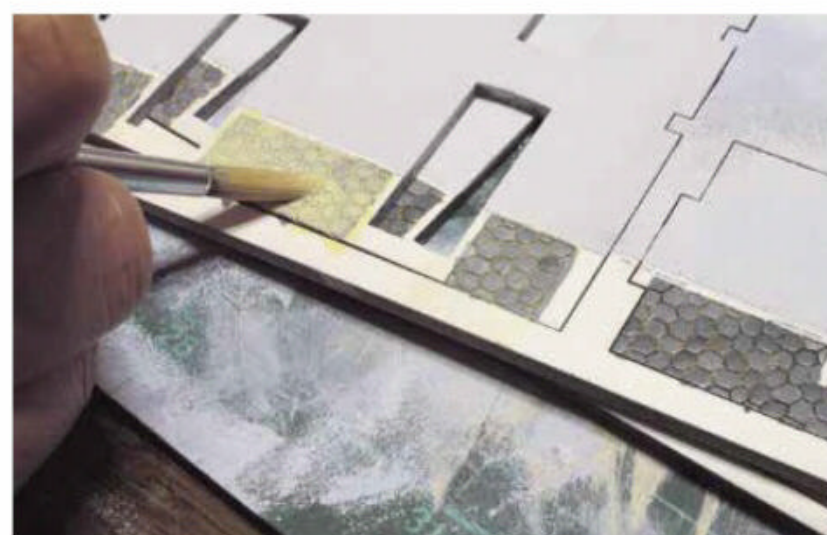
Platform template
(H0 scale)



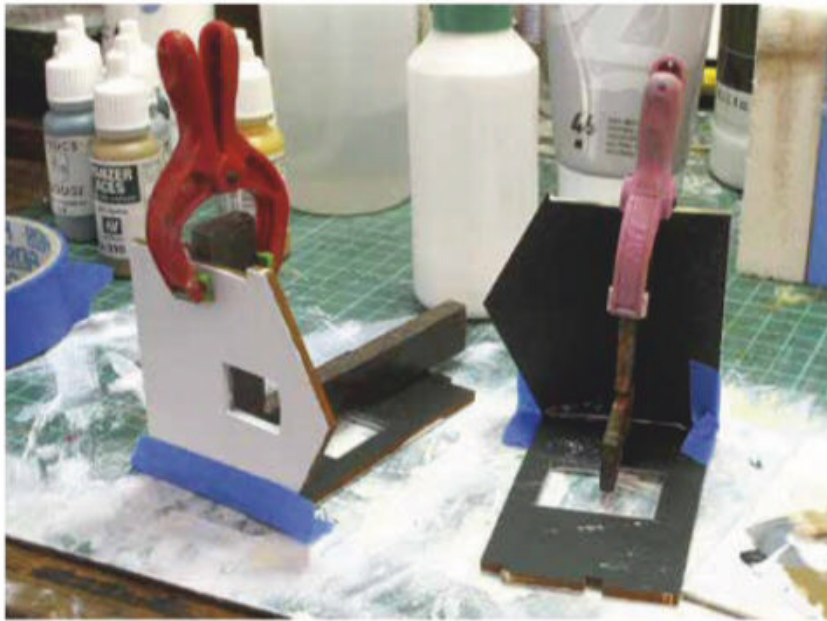
2 Before starting to decorate the parts, it can be worthwhile to carry out some tests on card offcuts. I compared the titanium ivory white suggested by the instructions with a neutral grey and with the Liquitex Payne grey, both generously blended with white. With its warm shades, the Payne grey won hands down.



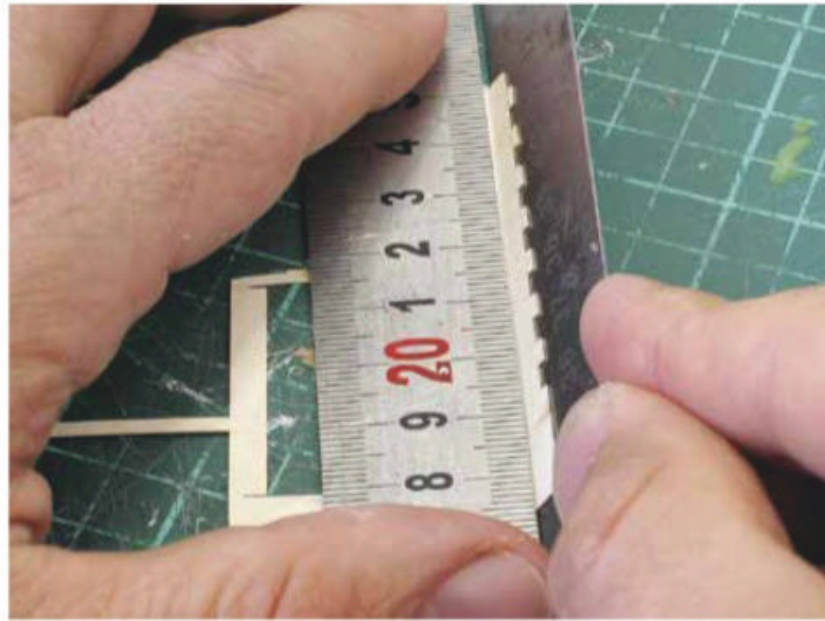
3 For painting the walls, I used a foam brush, which costs a few euros in graphic arts stores. The paint, very slightly thinned, is applied by gently tapping the surface of the parts with the large side of the brush. This ensures you will get a regular and finely grained surface. The facings are dealt with in the same way, using the Prince August ivory shade.



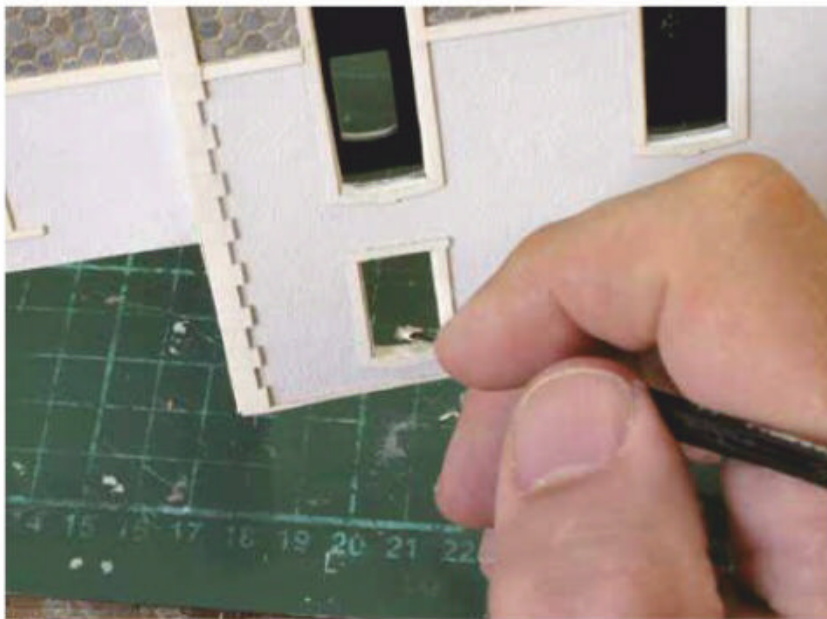
4 The facing stones along the bottom of the walls are painted in various shades of grey-blue. Once the grey is thoroughly dry, the joints are touched up with a wash of white blended with ochre, which is rubbed off so as to simply fill the hollows.



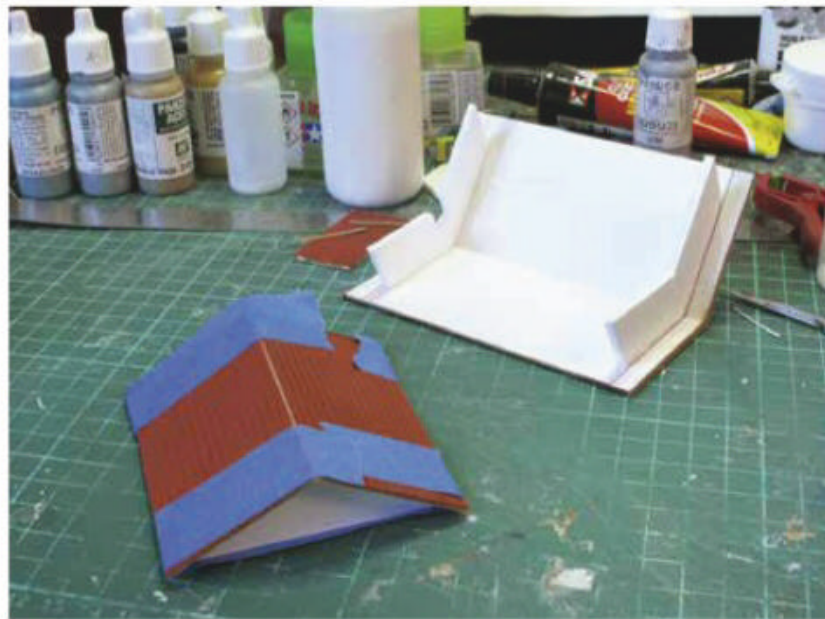
5 Laser cutting ensures that the parts are very sharp and there is hardly any need to work on them prior to assembly. I glue the walls two by two using Cléocolle, ensuring that they are perfectly squared while the adhesive sets. The two sub-assemblies are then glued together.



6 Before applying glue to the facings, I mark all the fold lines while the card is still thoroughly dry. The glue is then applied to the facings, and the facings to the walls. By proceeding in this way, the facings will fit perfectly.

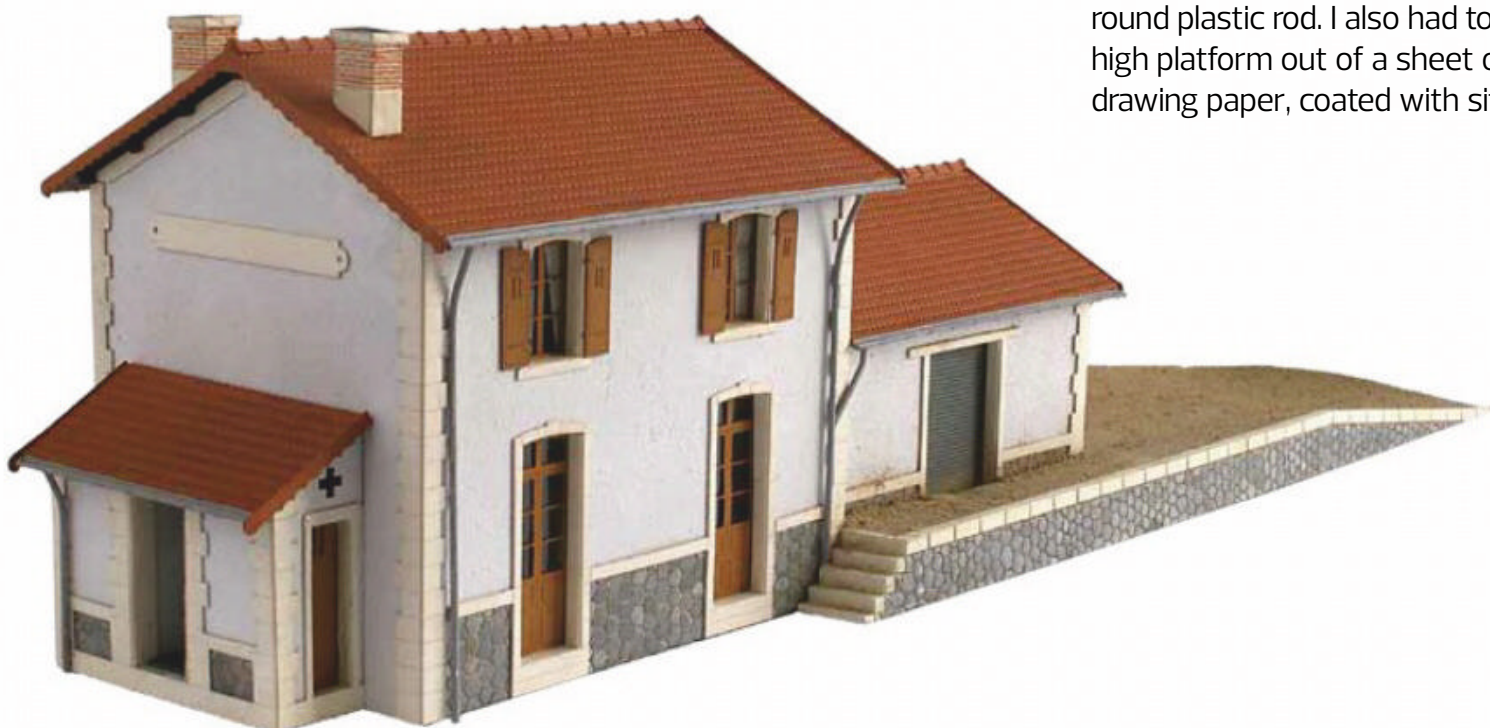


7 The way in which the facings are cut requires that the door and window frames be touched up with a paint brush.



8 To make decoration easier, I opted to make the roofs of the station building and of the goods shed removable, by gluing them to two sheets of 3mm thick foam board that fit inside the walls.

The building is still spotlessly clean and will soon be given a light weathering with pastels.



9 To finish off my building, I had to 3D print the ridge tiles and the gutters. The drainpipes are made out of round plastic rod. I also had to cut the high platform out of a sheet of Canson drawing paper, coated with sifted earth.

To find out more

Take a look at François Fontana's online videos of weathering techniques on the *Voie libre* Facebook.



A CFD station PROPERLY LOCATED!

Once your CFD station building is complete, it will still need to be located in a realistic environment. *Voie Libre* has delved into the archives and found original drawings and longitudinal sections of CFD station tracks, easy to model.



Text and illustrations (unless otherwise mentioned) : **Éric Fresné**
Photo: **Nicolas Novel-Catin**



Railcar 313 of the Velay-Express is seen arriving at Le Chambon-sur-Lignon, just on time to connect with the steam-hauled train and before continuing its journey towards Saint-Agrève. A platform that was stabilized in the past and is now overgrown: the facilities in a CFD station are, to say the least, basic.

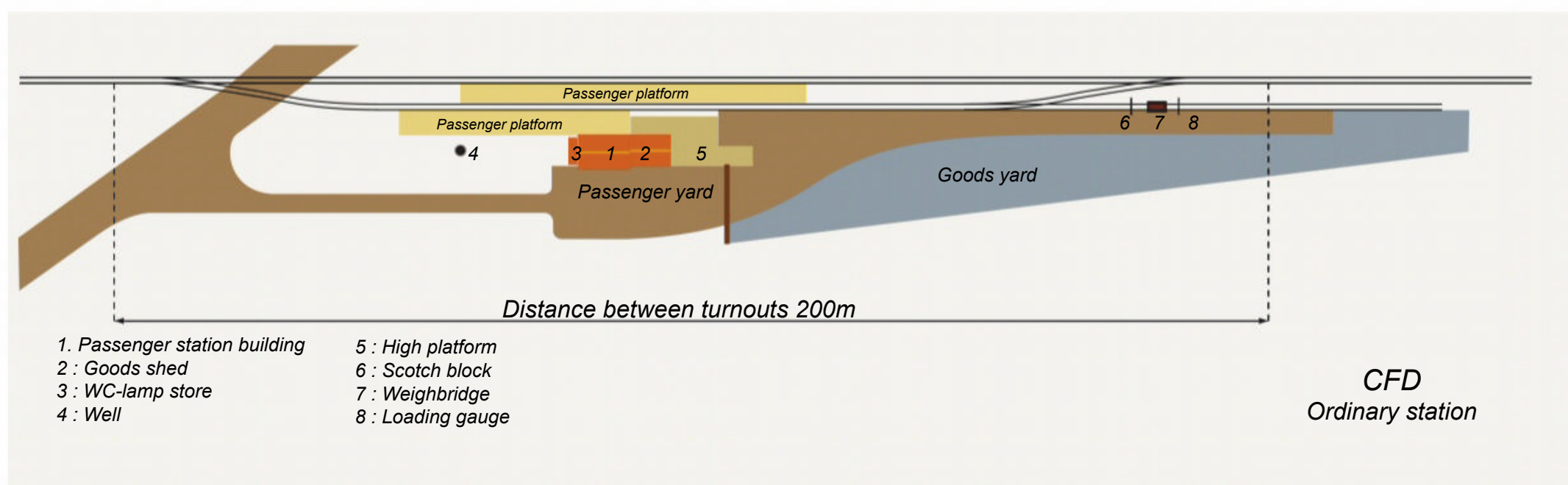


Figure 1.

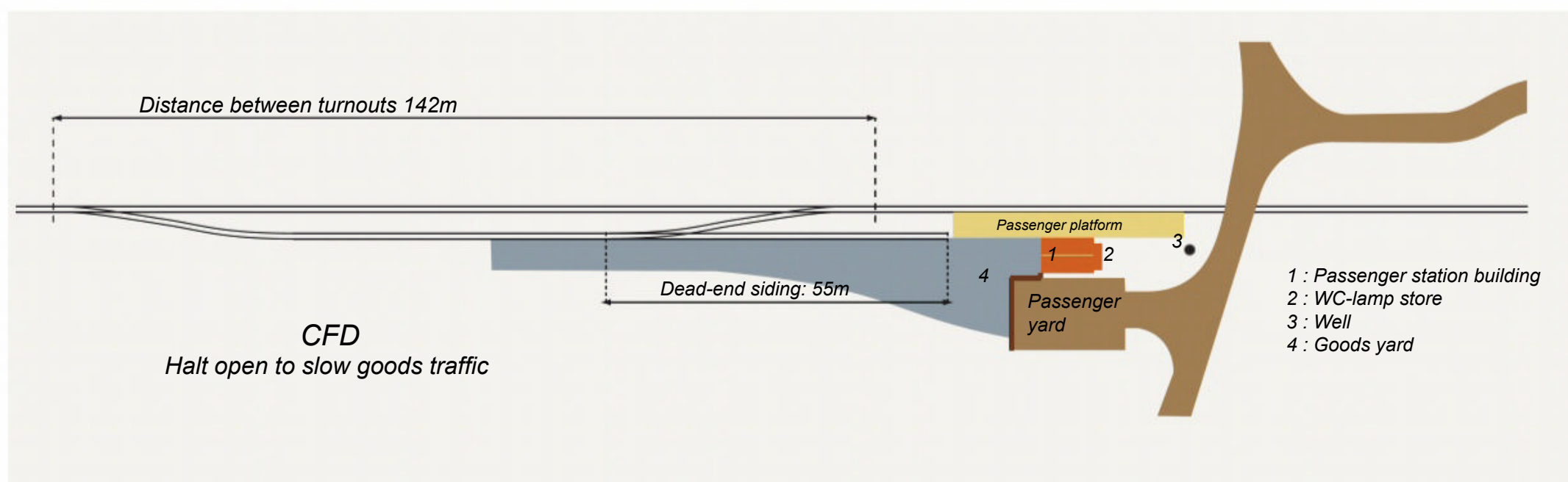


Figure 2.

Right from the outset, secondary railway companies frantically sought to save money, and this often led to choosing metre gauge track, as well as by building extremely basic facilities. In this respect, the Compagnie des Chemins de Fer Départementaux was very typical and its facilities were frequently illustrated in the literature of the late XIXth century.

We found our information in volume 6 of the Railway Treatise by Auguste Moreau, dedicated to secondary railways. And the outcome is that most of the recommendations made by the CFD are easy to reproduce in H0 scale, with very little adaptation required!

SHORT STATIONS

The CFD facilities were highly standardized. The company even drew up model formats that could be used on all the networks it was put in charge of. Of course, such models had to be tailored to local conditions, and this happened frequently. An “ordinary station” (**figure 1**) was generally built alongside the single running track. A loop track was found on the station building and goods shed side, with a dead-end siding in the goods yard. The distance between turnouts at each end of the station was only 200m, or 2.30m in H0 scale. Just the size for a long shelf or one side of a layout running round the walls of a room. ■■■

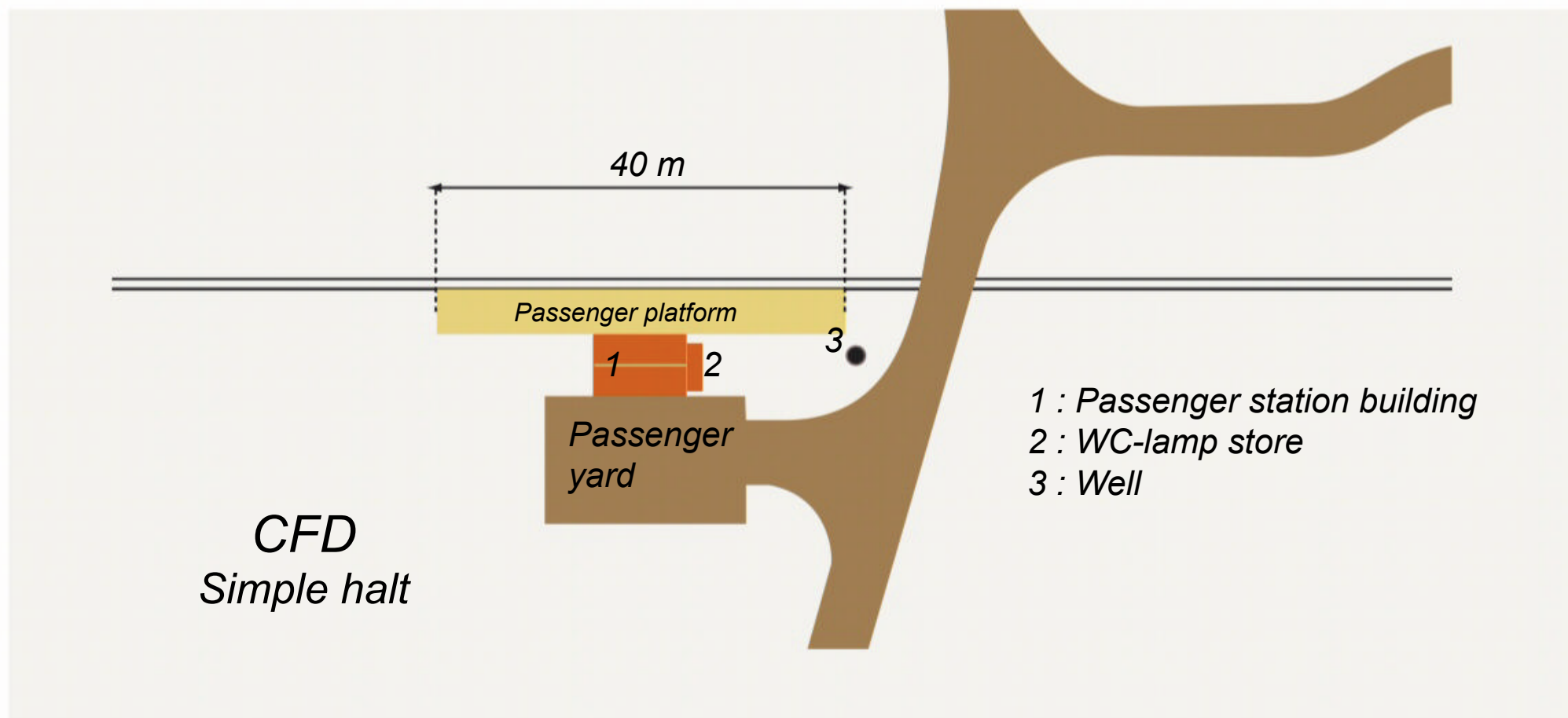


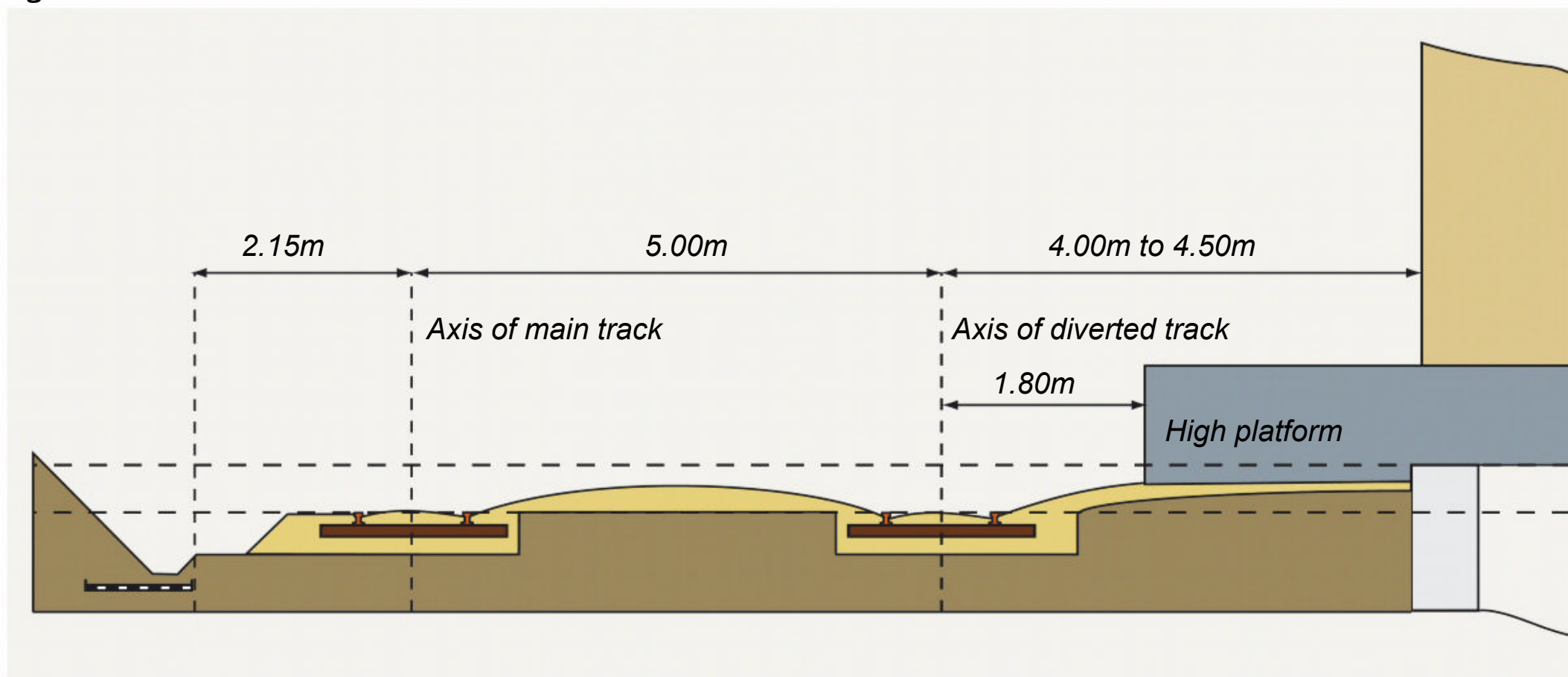
Figure 3.

■ ■ ■ Even shorter, the “halt open for slow goods traffic” (**figure 2**) fits into a length of just 142m, but the loop and the dead-end siding are located before the station building, and the latter has no goods shed, which makes the whole installation somewhat longer. A simple halt (**figure 3**) is just 40m long, the length of the single passenger platform. In all three cases, the station building is located alongside the tracks...

A DOMINANT STATION BUILDING

To keep things as simple as possible, the CFD combined all service functions in the same building. Depending on the type of station, the passenger facilities, the toilets and the goods shed were one single structure. This single building was always slightly above track level. The door threshold was located 45cm above the top of the rails (**figure 4**). This means 5mm in H0 scale, which is far from negligible and must be modelled on a layout.

Figure 4.



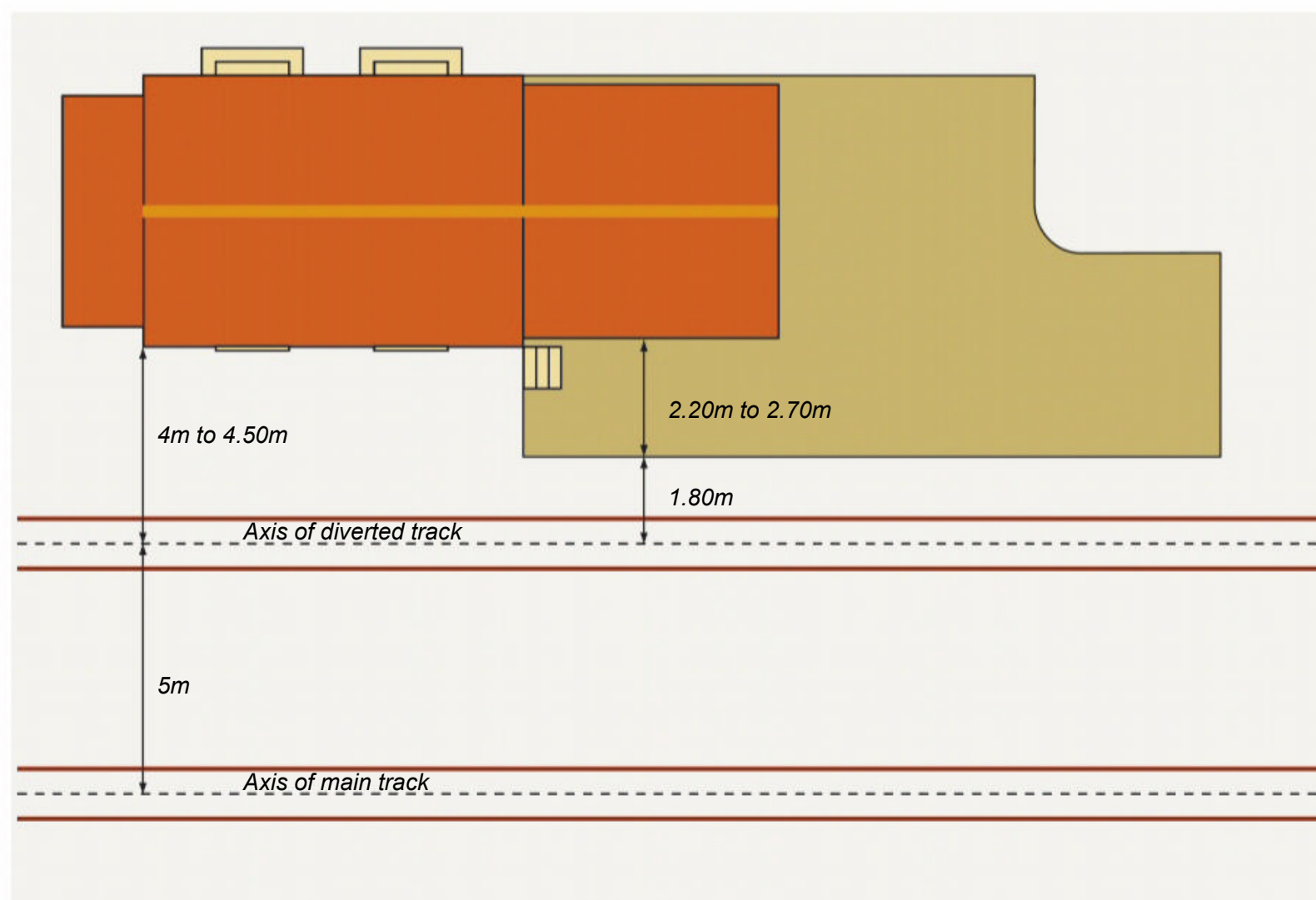
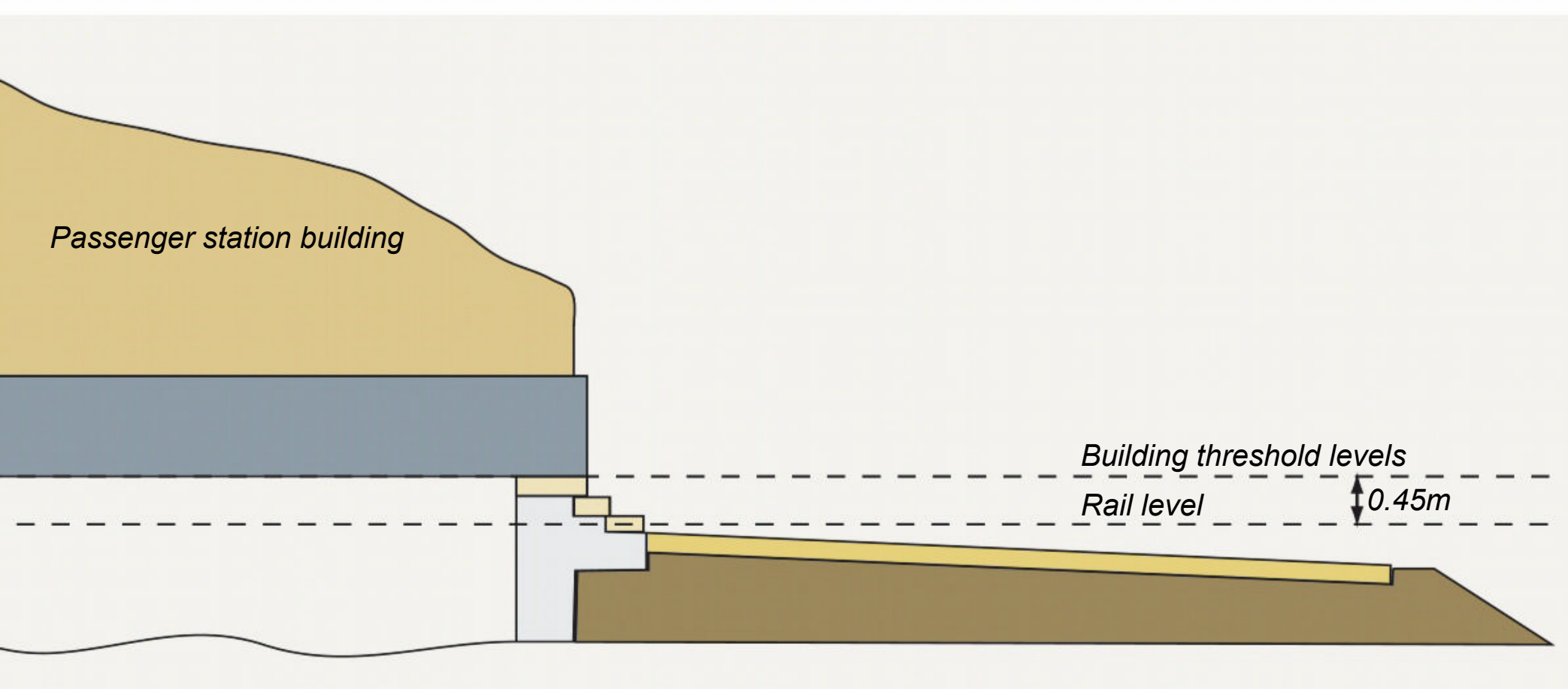


Figure 5.

Another feature of secondary railways in general and of CFD facilities in particular was the total absence of platform facings. Even though they are described in this way, the “passenger platforms” were simply strips of stabilized ground in which the tracks were embedded. As the tracks were spaced 5m from axis to axis, the platforms were logically 4m wide. The cross section of the platforms, which sloped downwards from the station

building and were domed between the tracks, allowed for rainwater to drain off without any need for a complex culvert system. Here again, the CFD was saving money. If the station featured a goods shed – and therefore a high platform – the latter was 1.80m from the axis of the goods siding (**figure 5**). On your layout, it is this dimension (21mm in H0 scale) that will determine the position of your building.



N° 316 in red/grey Chemins de fer du Vivarais livery, in a typically CFD environment.



The CFD trio in grey version, flat, open and box van are waiting in the sunshine for the arrival of a large locomotive already announced by REE.



**DIAGRAM
IN THE CENTRAL
FOLDER**



In St Agnès Village station, behind the small Decauville 0-4-2 T n° 6, two new box vans.

WAGONS *for Sainte-Agnès*

Text and illustrations: Gilbert Gribi

Remember: Sainte-Agnès, a touch of nostalgia. Gilbert Gribi's fine layout in VL 96. Gilbert describes how he built some goods wagons.

On this small layout, the rolling stock comprises two RPI Paramé type steam locomotives, carriages from the same artisan and goods wagons from the British Wrightlines range. Although the layout cannot accommodate all the rolling stock currently in my collection, I felt like beefing up my small company, to diversify

the goods wagon roster and to make operations more interesting for visitors.

The bogie wagons

One of the box vans looks like the ventilated livestock-cars used by the Americans for carrying cattle. Those used to carry sheep had an additional floor. I don't believe this type of wagon was ever used in Europe, so let's admit they were

SUPPLIES

Peco chassis ref. OR-40
Wrightlines bogies (second-hand)
Kadee n° 34 couplers
Grandt Line reefer hardware réf. 4014
Tamiya primer and paint



Other wagons on Wrightlines bogies hauled by the small Paramé loco.



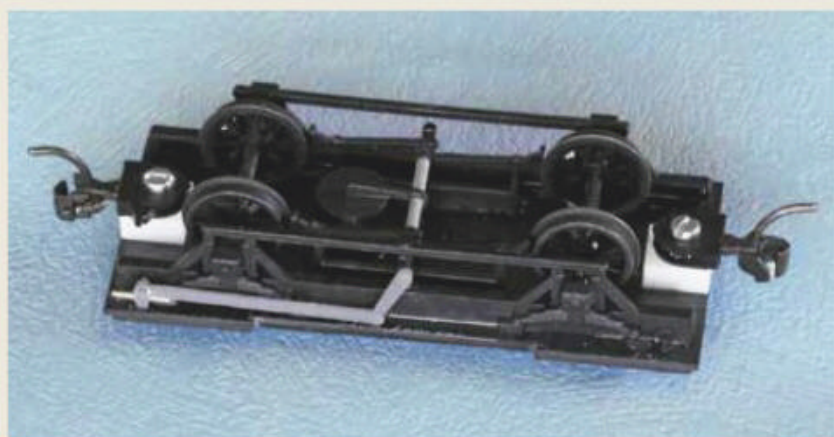
The rake of small 4-wheeler wagons.

favour of 14mm gauge track is no longer what it used to be and these models have become very hard to find. I still had a few bogies which I used. The wooden parts call on strips of samba, of various thicknesses. The doors and rivet lines are made out of card, computer-drawn and laser-cut and engraved. The parts used to guide the lower part of the sliding doors are from the Grandt Line range, and the door slides are made in the "GG 3D" workshop. As the bogies are made of white metal, I didn't have to add ballast to the wagons.

bought second-hand from the US Army. Their colour is somewhat unusual, but not unrealistic, as the liveries used by small American railway companies were very varied. I was very fond of the wagons in the Wrightlines range, but sadly this artisan has stopped his production; the trend in

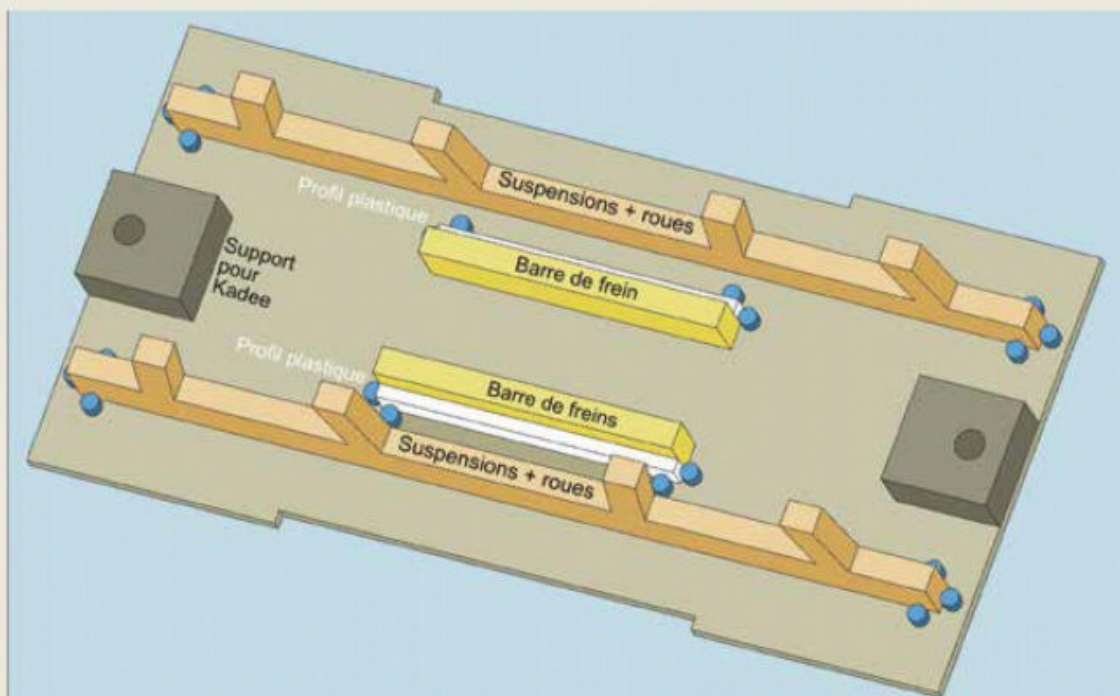
The 4-wheeler wagons

To complete this series of goods wagons, I also built five 4-wheeler wagons, one of them a refrigerated van. I used the Peco chassis as a base. Designed for 16.5mm gauge, it must be altered for 14mm gauge. Moving the wheels on the axles was straightforward, I use a 3D printed



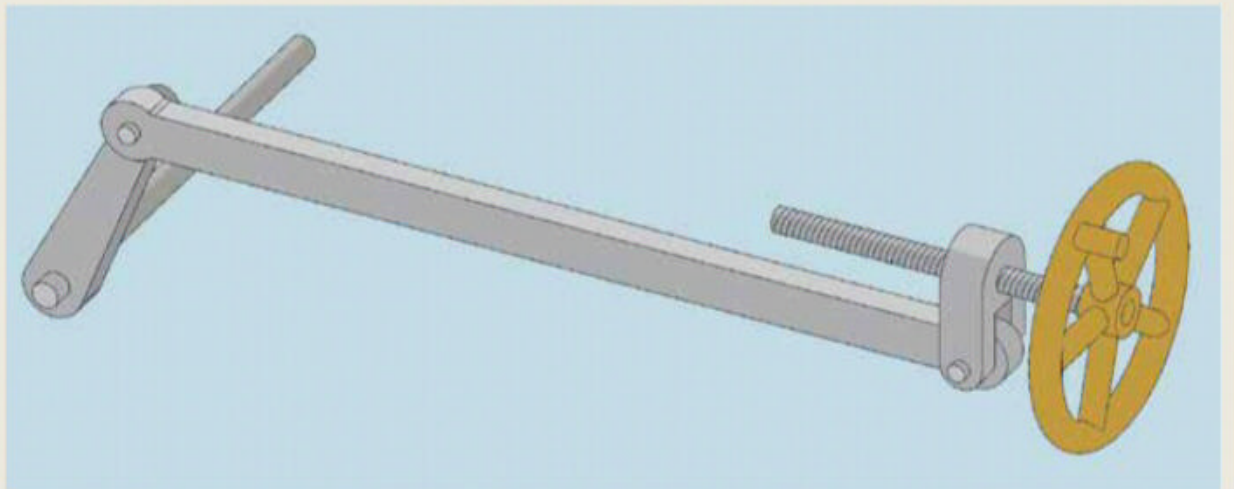
The trimmed Peco chassis, fitted with its couplers and its new brake lever.

The alterations that need to be made to the Peco OR-40 chassis.





A fully-fitted wagon end, with its brake wheel and brake hose.



The hand brake lever.

template. On the other hand, the parts that carry the brake shoes must be moved towards the inside of the chassis. For 16.5mm gauge, these two rods are glued between 6 tabs (blue). I removed those on the inside and glued a 1.25mm (white) plastic strip. In this way, the brake shoe bracket is properly located for the new gauge.

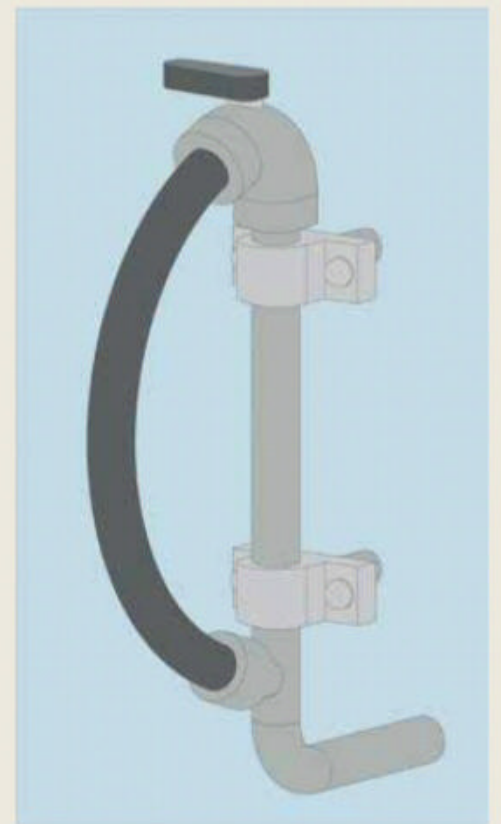
I wanted these wagons to have the same appearance as those already in my possession; the Peco flat wagon was too wide, so I trimmed it on both sides. I planned to do so using my circular saw, but the plastic melts and the cut wasn't neat. So I used an Olfa knife designed for cutting Perspex (Editorial note: a specific knife for cutting laminated materials).

In my view, the brake lever, despite being supplied with the kit and being realistic, is unsightly. Surfing the web for pictures of narrow or meter gauge wagons, I found South African wagons featuring a system that suits me fine: a brake wheel fitted at one end of the wagon works the brake rodding. As I was unable to find pictures or drawings illustrating precisely how this system works, and despite the risk of irritating nit-pickers, I improvised a system and 3D printed it. Since then, in issue 85 of Voie Libre, I found the drawing of a Decauville wagon fitted with a similar system, and I observe that I wasn't very far off course! As the chassis must be separated from the body, the white metal

brake wheel (Wrightlines) is fixed to the body.

The brake hoses supplied with the Peco chassis looked to me overscale. This may be prototypical but is out of proportion on my small wagons. So I designed a 3D model and added a few details: the valve and the brackets.

The Kadeen n° 7 couplers are from my scrapbox. No longer available nowadays, they have been replaced by another reference, numbered 34. As these wagons are a bit too light, I ballasted the chassis with sheets of white metal.

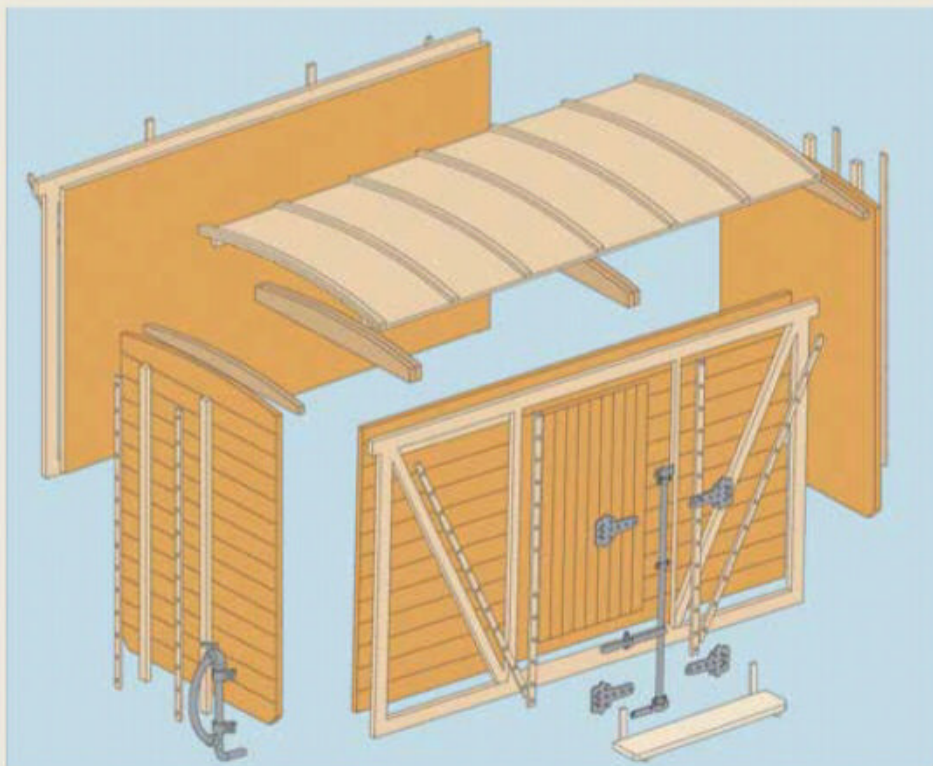


The brake hoses.

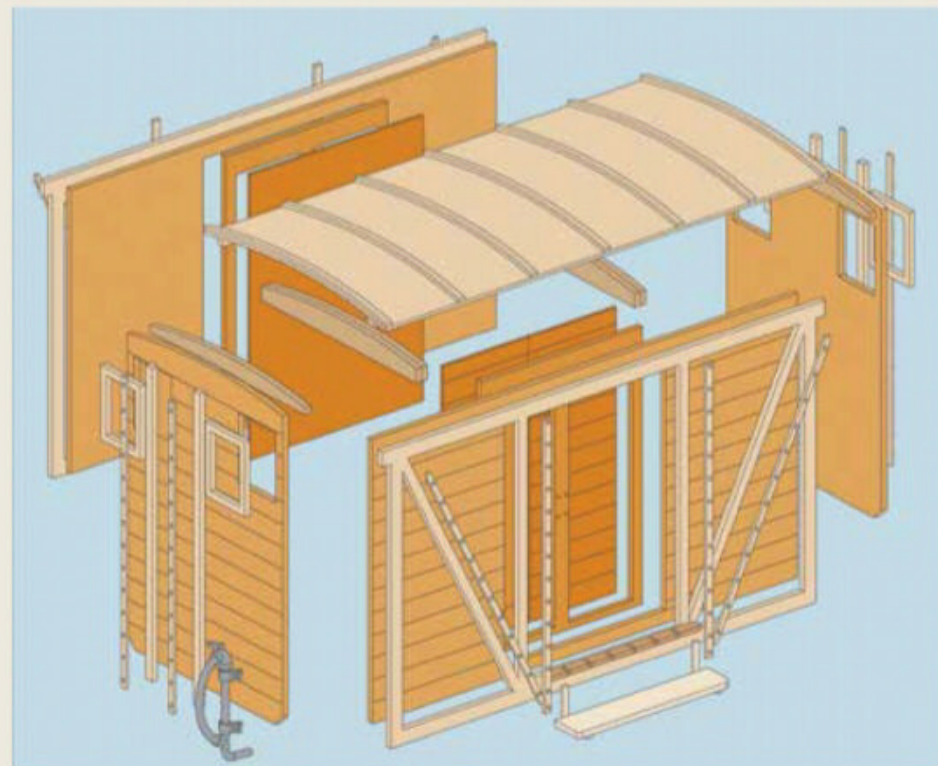


The two different bodies. Refrigerated in the foreground, goods behind.

Rolling stock



Exploded diagram of the refrigerated wagon.



Exploded diagram of a goods wagon.

The bodies

They consist of several layers of very rigid white card, of different thicknesses, computer-drawn and laser-cut. As the card's appearance was too smooth, I engraved wood veins with a small spatula. I decided that body and chassis could be separated. The chassis is wedged, therefore, inside the body, against four lengths of wood and screwed into two cross-beams. To bend the card used for the roofs, I engraved deep seams reproducing the planks. They are supposed to be covered with bitumen paper, simulated by stippling acrylic paint from a tube with a small flat brush.

The refrigerated wagon

The refrigerated wagon doesn't have the same doors as the 4 others. They are inspired by those found on American wagons. The door hardware is from the Grandt Line range. As my doors aren't as high as those found on US wagons, the rodding is shortened. Note that this wagon has no windows. To give it more realism, the roof is fitted with two ventilators recycled from a Fleischmann Magic Train carriage.

Painting

Before being assembled, the various parts were given a coat of Tamiya Surface Primer White, thinned with the Lacquer thinner and not the X-20. In the Tamiya paint range, I selected grey, brown and a grey/blue for the bodies; black for the chassis and dark grey for the roofs.

These 5 wagons do not reproduce specific prototypes, they are the fruit of my imagination, while attempting nevertheless to achieve a modicum of coherence. Enjoyment is not born from abiding strictly to the rules of realism, but from imagining, drawing and finally creating something unique and very pleasing. If this article could encourage

GILBERT'S ARTICLES DEALING WITH 0-14 ROLLING STOCK

LR 571, juin 1994 : "Paramé, a delightful Decauville steamer"

LR 588 (VL 6 & 7), janv. 1996 : "Easy-to-build railcarr"
(0-16,5 ou 0-14)

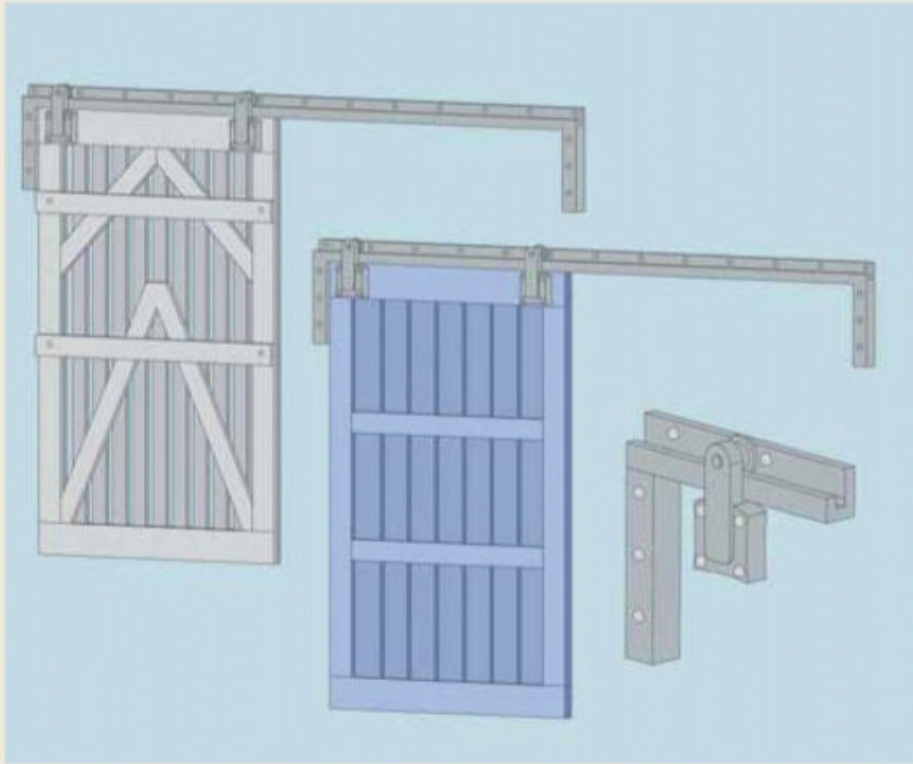
LR 591 (VL 8), avril 1996 : "A workshop wagon"

LR 593 (VL 9 & 10), juin 1996 : "An American tank wagon on a Wrightlines base"

LR 597 (VL11), nov. 1996 : "Starting all over again with the same one: Decauville, new cab"

"Two fine carriages for Les Mages"

VL96, 2019 : "Sainte-Agnès, a childhood sweetheart "



The sliding doors.

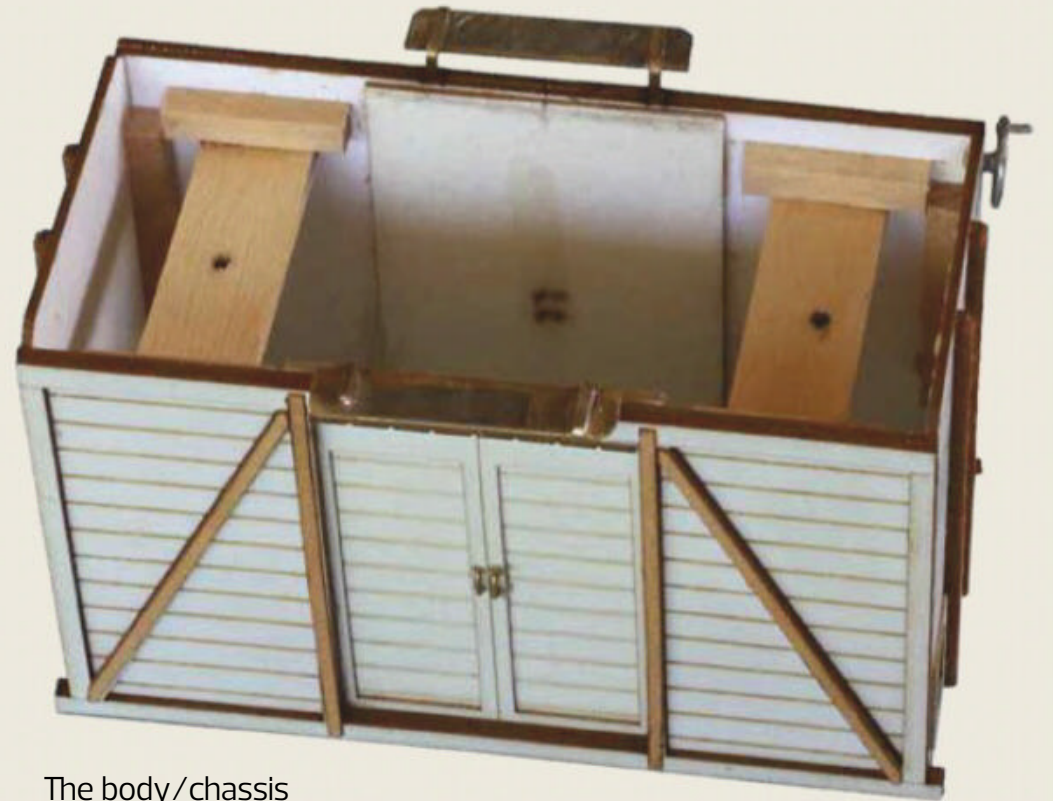
modellers to undertake something different from what is usually seen, and to return to this wonderful 0-14 scale, I would be delighted. ■

A FEW ARTISANS PRODUCING 0-14 MODELS

Trains d'Antan: <<https://newboutique.modele-reduit-train.com>>

Narrow Planet: <<https://shop.narrowplanet.co.uk>>

Locosnstuff: <<https://www.locosnstuff.com>>



The body/chassis
assembly principle



A fine set of 4-wheeler and bogie wagons.

Personalized sleepers for your layout

Building your own track is always a pleasant exercise but doesn't often go beyond modelling wood sleepers. New technologies, and in particular 3D printing, now allow us to model steel sleepers.

Text and illustrations: **Eric Fresné**



On the Voie Libre forum, the lockdown period we have just lived through provided the opportunity for a small group of modellers to tackle new projects, just for the fun of sharing distance-modelling moments. My choice was to start building a small 00-9 layout around the central theme of a stone quarry. One of the challenges of this informal competition was to work with what each modeller had in store at home. As far as track was concerned, all I had were the Peco Setrack lengths of my test oval, quickly taken to pieces. The board it was fixed onto also found a new life as the baseboard for the new layout ...

The trackplan, kept very simple, naturally features tracks laid inside the quarry. And for these, I decided to implement an idea that had been in the back of my mind for quite some time: to make track fitted to steel sleepers.

DESIGN AND FABRICATION

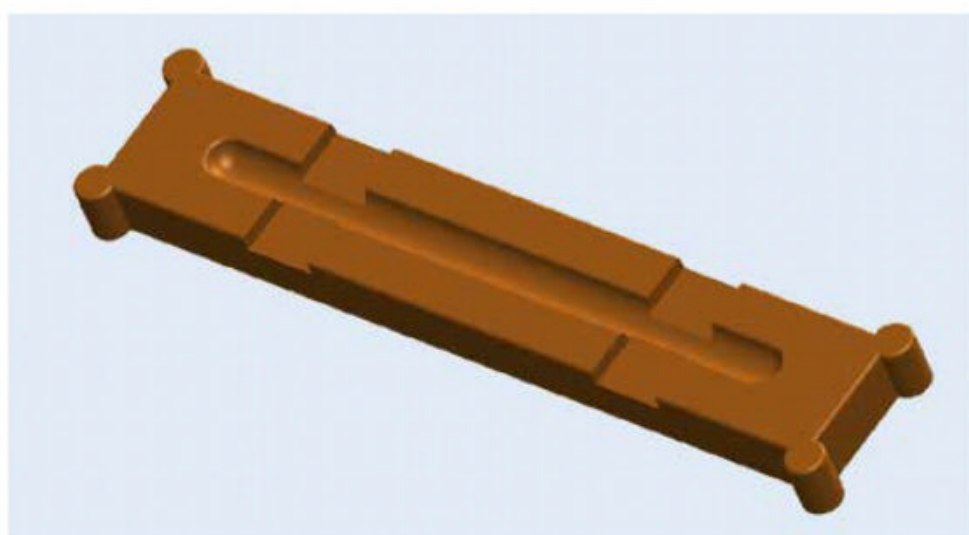
Steel sleepers can be made easily from plastic strips, cut to the proper length and put into shape. An alternative solution consists in designing them

using 3D software. Last November, I invested in a wire 3D printer. The model is a Discoultimate manufactured by Dagoma, a basic model which can provide quite satisfactory results, provided some time is taken adjusting the printing parameters. So, I dived into the world of 3D.

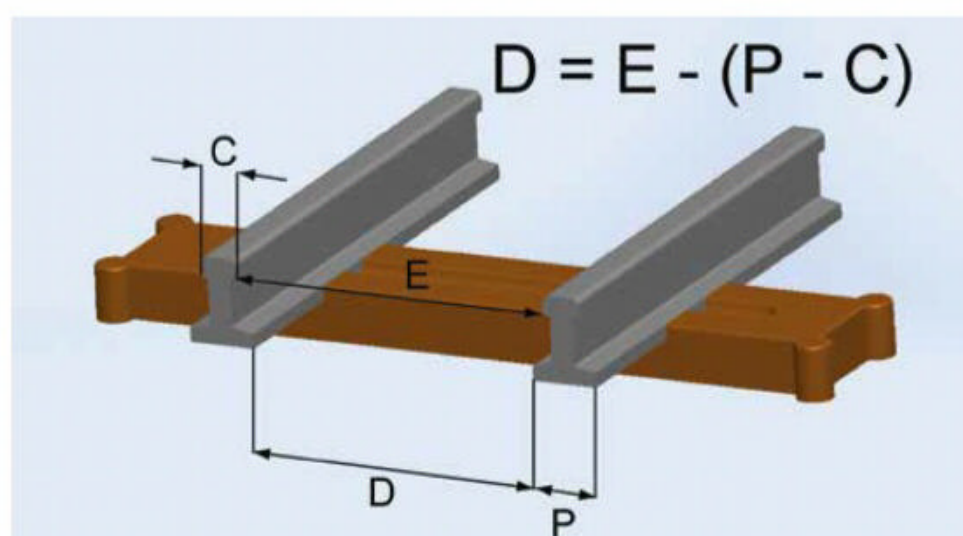
In summary, a steel sleeper can be considered as being a parallelepiped-shaped box. Such sleepers are very varied, and I combined the features of several different types to obtain a visually satisfying result when seen from a distance of 60cm. Generally speaking, the rails were either riveted through their base to the sleepers or fixed in place by a system of chairs. In 1/76 or 1/87 scale, these parts would be almost invisible or would have to be overscale to be visible to viewers. I decided not to model them. On the other hand, I dug two parallel grooves, a few tenths of a millimeter deep, in my sleepers, to ensure the rails were properly spaced. To be efficient and hold the rail in place properly, the width of each groove must be the same as the width of the rail base. After having messed around a bit, I realized that calculating the distance between ...



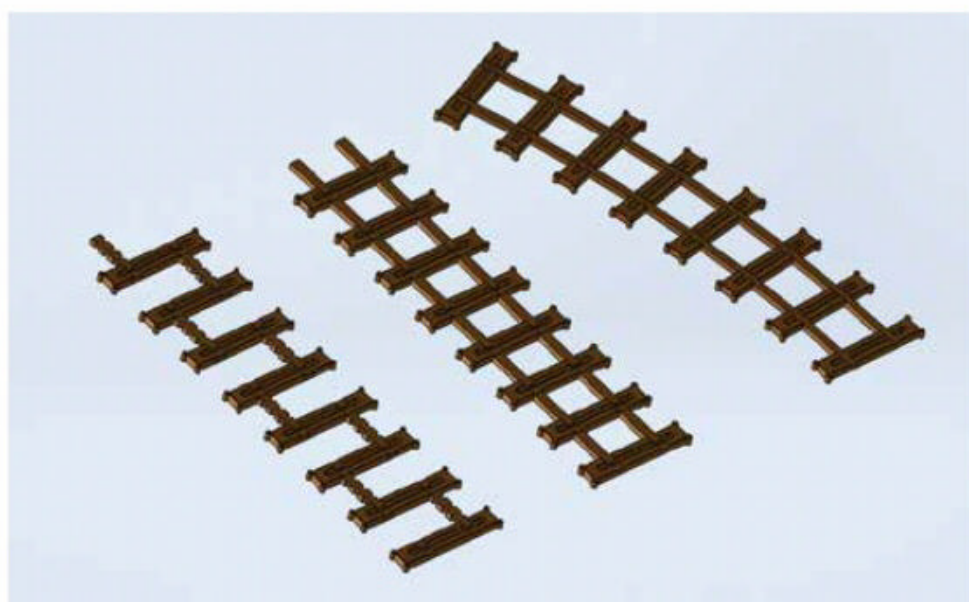
From military networks to small quarries, portable steel track is a common feature of narrow gauge railways.



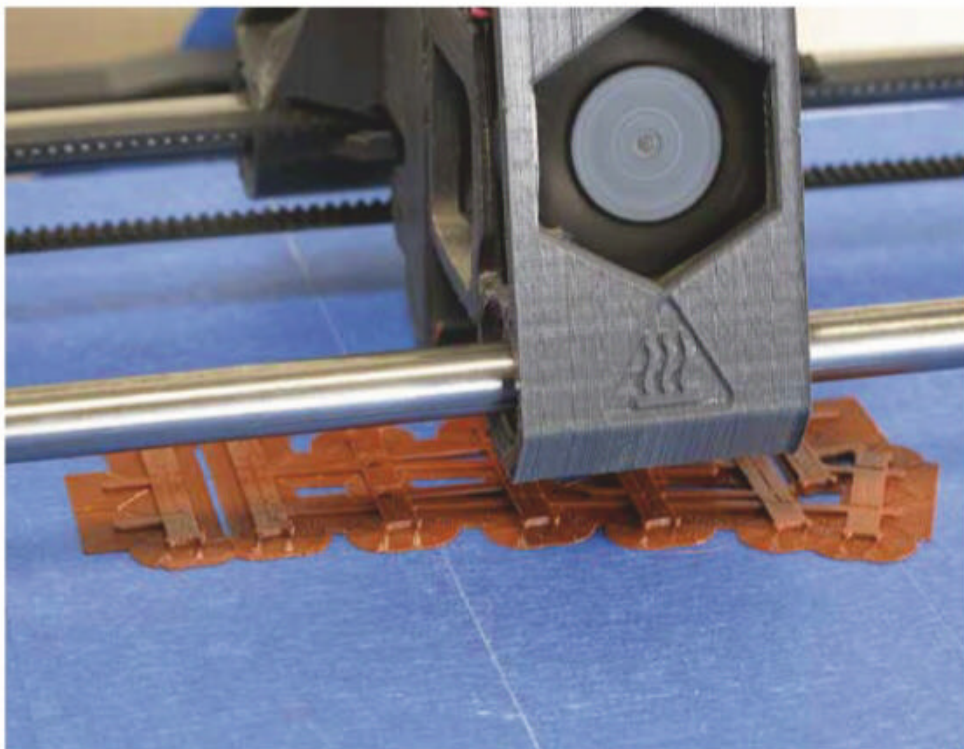
Fitting into a parallelepiped shape, a steel sleeper is a fairly simple item to model. Although they are not found on prototype track, the two parallel grooves are there to hold the rails accurately in position.



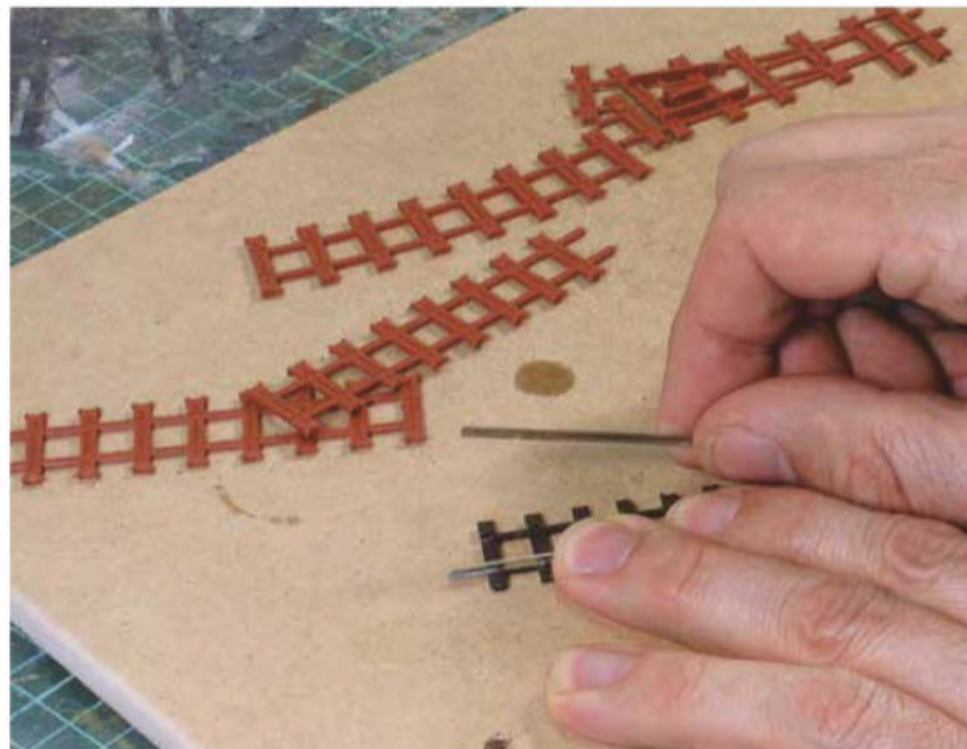
More than the gauge per se, it is the distance between the inside edges of the rail bases that will enable us to obtain a properly gauged track. As the rail dimensions are known, this distance is obtained through a very simple calculation.



Once the first sleeper has been drawn, it is very simple to duplicate it to obtain straight, curved or even flexible lengths depending on how the fixing points are drawn, ready for printing.



Turnout sleepers being printed. A part of this type is a 30-minute job and costs 0,11 euro.



Once the sleepers are printed, the track can be built, starting with the removal of the rails from the Peco lengths. This can be done easily by hand.



The lengths of sleepers are first glued to the baseboard, using neoprene contact adhesive.



Once the sleepers are in place, I glue the rails with cyano adhesive. The groove is dimensioned to provide a tight fit for the rail. The unmolested Peco length is just there for laying the track. It helps to position the two rails lengthways.

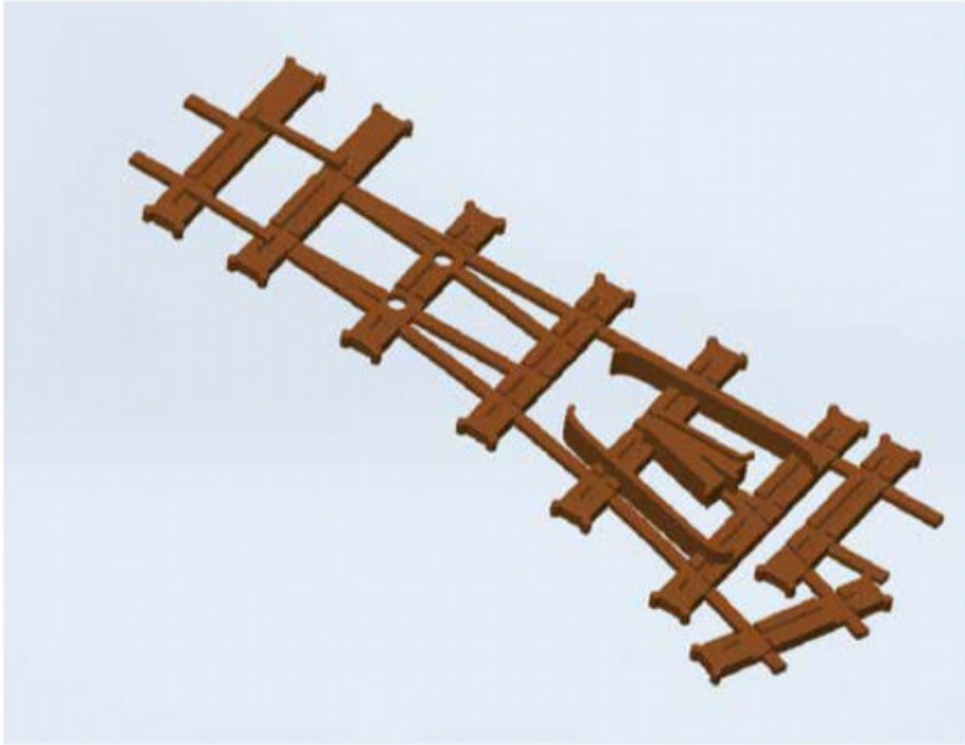
■■■ grooves corresponded to a simple mathematical formula, applicable to any scale and any gauge. You need to know P, the width of the rail base, and C, the width of the rail head. For a given gauge E, the distance D between the edge of the rail bases will always be equal to $E - (P - C)$.

Once this standard sleeper has been created, it is very easy to multiply it and design straight or curved sections with a pre-defined radius, then print as many as are needed. Assembling the track is child's play. Start by gluing the sleepers

to the baseboard. Then the rails, lifted off the Setrack lengths, are pushed into the grooves. Drops of cyano adhesive will confirm the assembly.

A BIT MORE WORK ON THE TURNOUTS

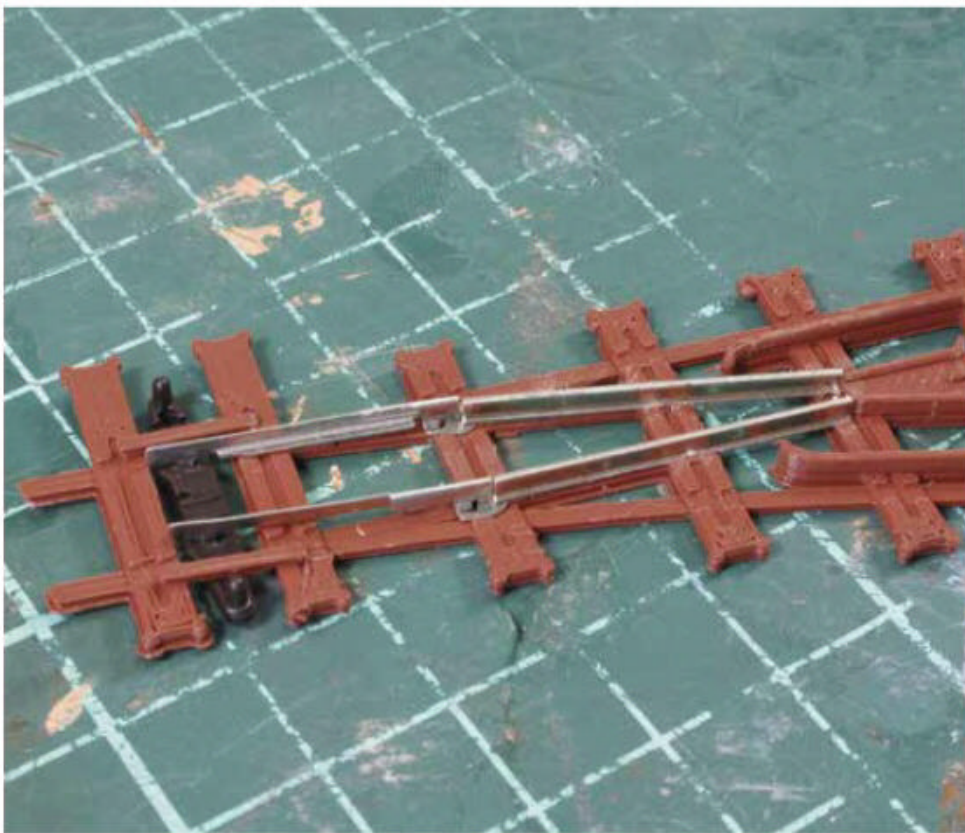
Designing the one and only turnout followed the same basic principle. I re-used the tie-bar and rails from a Peco Setrack turnout, grafted onto 3D printed sleepers. The grooved sleeper sys-



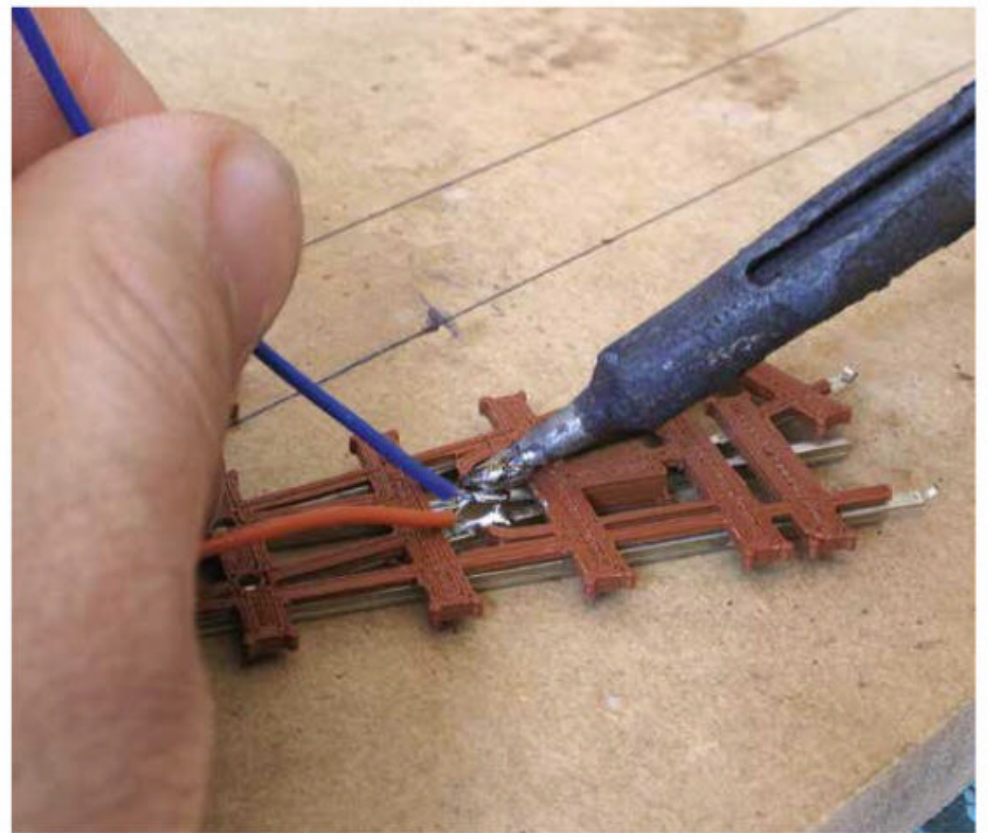
The turnout sleepers are built in the same way as those used for the simple lengths. The design just took a little longer.



The Peco turnout was completely and carefully dismantled, so as not to warp the parts. The frog connecting wires were simply eliminated. The tie-bar was re-used.



The tie-bar and point blades assembly is glued in place first. The other parts will follow.



Two wires soldered under the turnout will feed the point blades.

tem turned out once again to be very efficient. After some trial and error and a few test prints, I obtained a set of sleepers onto which the Peco rails fitted neatly.

To be on the safe side, I started by the point blades and the tie-bar. Then, I fitted the stock rails and finished the job by fitting the frog. Don't forget to solder two wires to feed the point blades. One small advantage of 3D printing: as by definition a right-hand turnout and a left-hand one are perfectly symmetrical, all you need to do is design

one of the two and program the machine so that it prints the sleepers in the way you want.

FINISHING TOUCHES

Decorating this type of track with steel sleepers is pretty similar to doing so with standard track. I painted all the track in a rusty shade to emphasize the sleepers in the ground. The ballast was fixed in place with a blend of one third water and two thirds of matt acrylic medium. Once the glue had thoroughly set, I applied a Vallejo "European ■■■

THE RIGHT RAIL FOR THE RIGHT TRACK

When planning to build your own track, it is worthwhile devoting some thought to the dimensions of the rails you are going to use, to be as realistic as possible.

In the modelling field, a rail is defined by a code, whose unit is one tenth of an inch. Thus, a code 100 rail has a height that equals 100/10 of an inch, or 2.5mm. Therefore, depending on the scale in which you model, such a rail will not represent the same thing. In 1/87 scale, it will represent a 22cm high rail. In 1/35 scale, the same code 100 rail will represent a 9cm high rail... **Table 1** shows the dimensions of various commercially available rails and their real height in each of the most common scales.

In reality, a rail is usually defined by its weight per metre rather than by its height. Documents, such as the Decauville catalogue 130, used to develop **Table 2**, make it possible to establish a relation between both values.

Using all this data, we drew up **Table 3** which shows at a glance which code to use for modelling a specific type of track. As you can see, all scales do not get the same treatment. It is fairly easy to model lightweight rail in the larger scales. On the other hand, in H0 or 00 – and worse still in N – compromises will have to be accepted and priority given to the visual aspect of the track, rather than being truly to scale. That is also what modelling is about...

Prototype height of the rail obtained as a function of the scale and code of the rail used

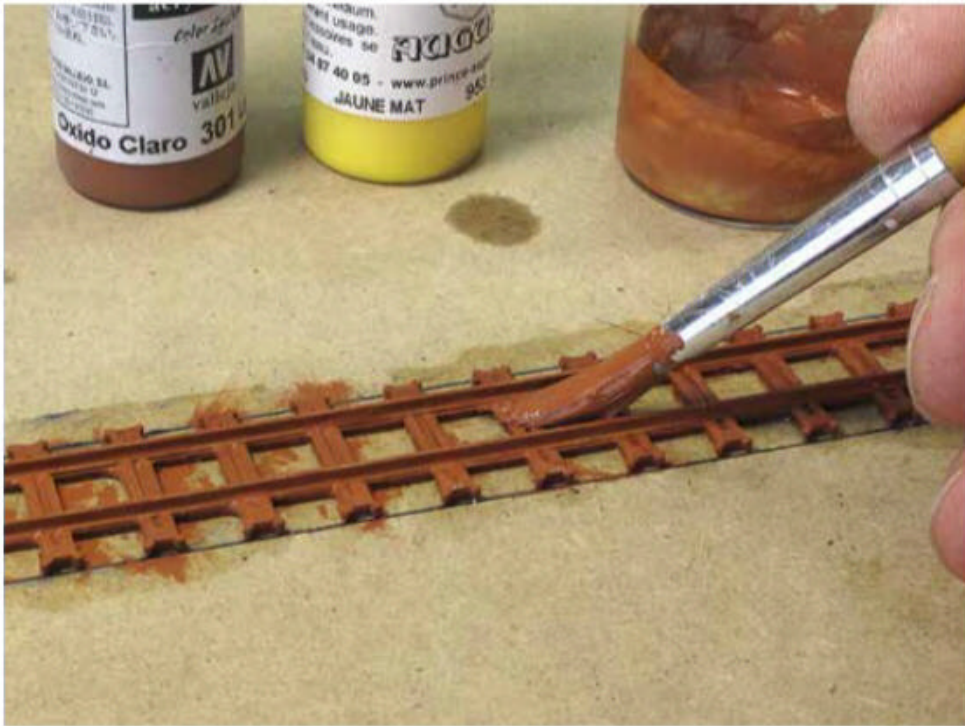
	Rail height (in mm)	Rail base width (in mm)	Rail head width (in mm)	Prototype scale height (in centimetres)						
				N	H0	00	0	1/35	G	Sm32
Code 40 Micro Engineering	1,11	0,99	0,51	18	10	8	5	4	2	2
Code 55 Micro Engineering	1,39	1,37	0,66	22	12	11	6	5	3	3
Code 60 PECO	1,57	1,24	0,76	25	14	12	7	5	4	3
Code 70 PECO	1,78	1,72	0,78	28	15	14	8	6	4	3
Code 75 PECO	1,9	1,72	0,78	30	17	14	8	7	4	4
Code 80 PECO	2,03	1,39	0,63	32	18	15	9	7	5	4
Code 82 PECO	2,08	1,77	0,89	33	18	16	9	7	5	4
Code 83 PECO	2,1	1,72	0,78	34	18	16	9	7	5	4
Code 100 PECO	2,5	2,28	1,04	40	22	19	11	9	6	5
Code 143 PECO	3,63	3,2	1,6	58	32	28	16	13	8	7
Code 250 PECO	6,35	4,06	2,79	102	55	48	28	22	14	12

Height of prototype rails as a function of the weight per metre (source : Decauville catalogue 130)

Weight per metre	4,5	7	9,5	12	15	18	20	25	30
Rail height	4,1	5	6	7	8,4	9	9,85	11,5	12

Codes usable to represent prototype tracks in the most current scales used

Échelle	N	H0	00	0	1/35	G	Sm32
Code 40	/	20 kg/m	15 kg/m	4,5 kg/m	4,5 kg/m	/	/
Code 55	/	30 kg/m	25 kg/m	9,5 kg/m	7 kg/m	/	/
Code 60	/	/	30 kg/m	12 kg/m	7 kg/m	4,5 kg/m	/
Code 70	/	/	/	15 kg/m	9,5 kg/m	4,5 kg/m	/
Code 75	/	/	/	15 kg/m	12 kg/m	7 kg/m	4,5 kg/m
Code 80	/	/	/	18 kg/m	12 kg/m	7 kg/m	4,5 kg/m
Code 82	/	/	/	18 kg/m	12 kg/m	7 kg/m	4,5 kg/m
Code 83	/	/	/	18 kg/m	12 kg/m	7 kg/m	4,5 kg/m
Code 100	/	/	/	25 kg/m	18 kg/m	7 kg/m	7 kg/m
Code 143	/	/	/	/	30 kg/m	9,5 kg/m	12 kg/m
Code 250	/	/	/	/	/	15 kg/m	30 kg/m



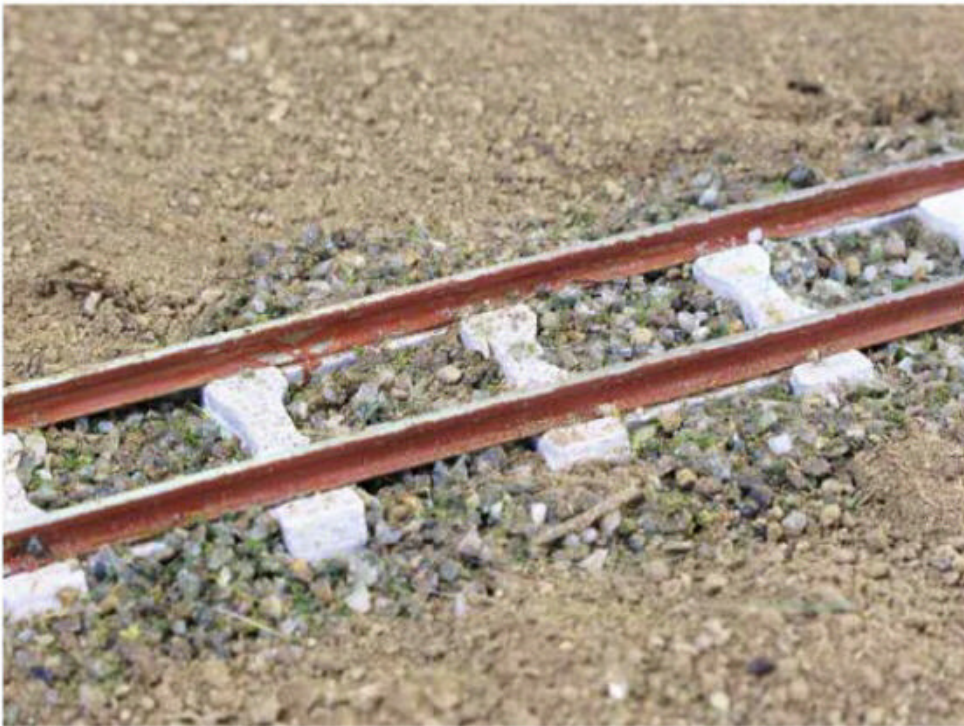
All the track, sleepers and rails, is painted in a rusty shade.



There is not much to say about the ballast, fixed in place with thinned matt acrylic medium. Remember to spread out the ballast evenly so as not to conceal the sleepers.



To enhance the appearance of the sleepers, I applied a Vallejo "European earth" wash.



The technique I used is not restricted to steel sleepers. I also modelled Vagneux concrete sleepers, used on the Pithiviers to Toury tramway.

■■■ earth" wash to each of the sleepers, to enhance the hollows.
So, if you feel like venturing into the field of steel sleepers, the files of my various track elements can be downloaded on the Voie Libre blog. And conversely, if you give a try to drawing your own track in a different scale or a different gauge, do not hesitate to share it with us.

It is now your turn to come up with new ideas for sleepers.



AN ATLAS TRAMWAY *becomes a narrow gauge railcar*

Some time ago, Atlas released a collection of tramways in 1/87 scale. Amongst these, the D type narrow-bodied motor unit from the Dijon network, in its original red and cream livery, inspired me to undertake a conversion job to obtain a narrow gauge railcar.



Text and illustrations: François Fouger



1 The Atlas Dijon tramway, straight out of the box.

Procurring the D type Dijon motor unit was effortless: I had subscribed to the collection! I converted it into a railcar able to run on 9mm gauge H0e track.

Dismantling and adapting the body

Most models in the Atlas range are designed in the same way: the lights or the buffers hold everything together. Sometimes, they are not properly glued,

and that's a great help; other times, sadly, the glue holds and the rod that runs through the parts gets broken. Once the body has been removed, I got rid of all the clutter on the roof: line number signs, pantograph, ventilators... After having filled in the holes with Tamiya or Sintofer putty, I protected the sides with masking tape, then applied a coat of primer to the roof before painting it grey, using a spray can as I didn't have an airbrush to hand.

Motorization

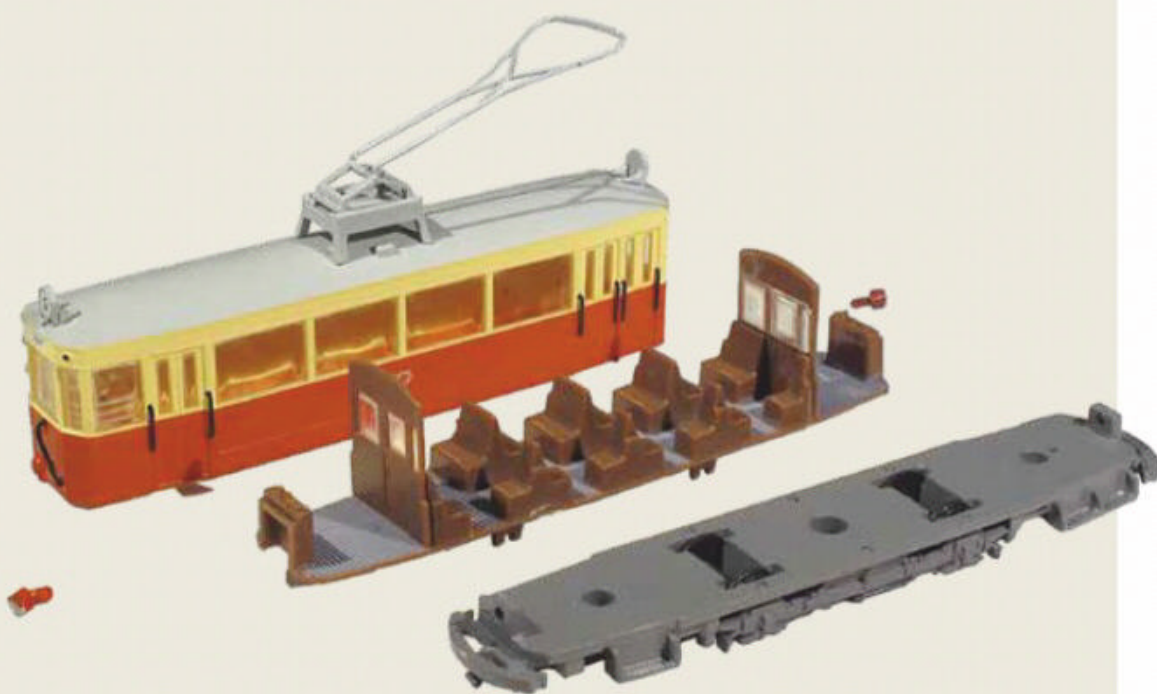
After having studied the features and dimensions of the various Kato and Tomytec driving mechanisms available in N scale, I opted initially for the Tomytec TM-07 reference, which gives the railcar a pleasing appearance. However, as it cannot run through 220mm radius curves, I finally went for reference TM-20, also shown for a 220mm minimum radius, but which can actually handle the "historic" 140mm radiuses found in the Egger-Bahn and Jouef ranges, thanks to its short wheelbase. ■■■

ATLAS IN NARROW GAUGE

The small railcar is waiting to leave Gragnan station.



2 The lamp must be delicately turned with a pair of pliers to remove it.



3 The three parts are easily removed.

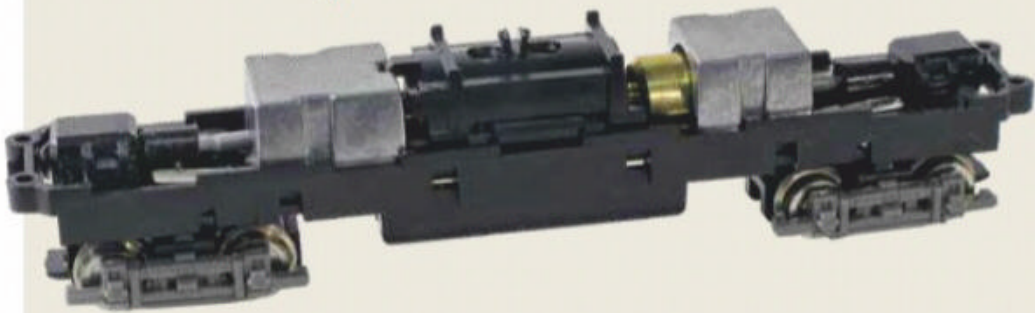


4 The tabs that hold the pantograph in place are removed with a sharp blade.

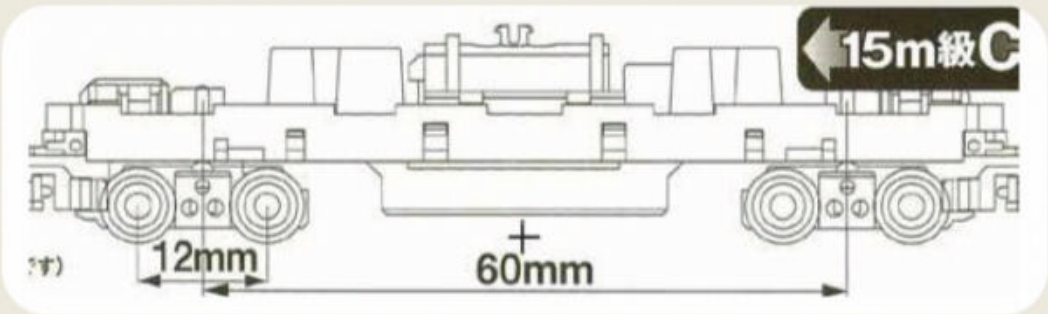


5 The holes in the roof are filled, the relief sanded and the roof painted grey.

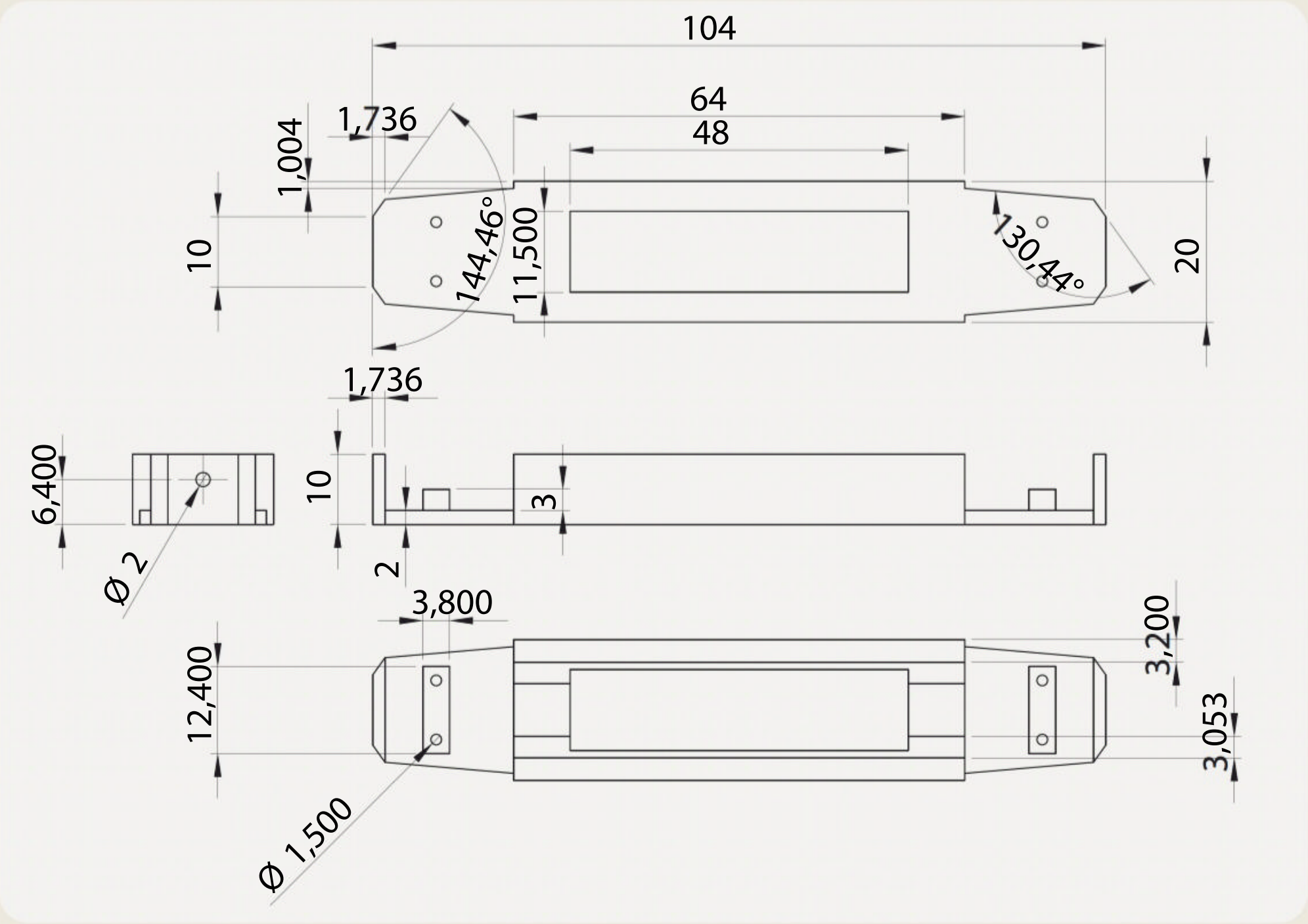
Motive power



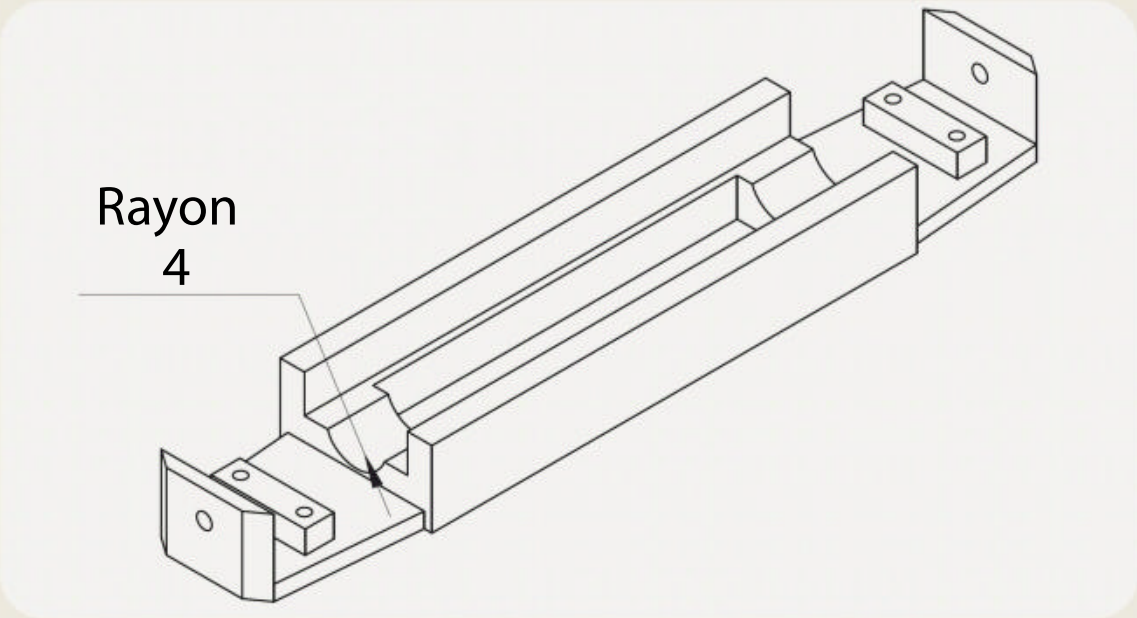
6 The Tomytec TM-20 driving chassis.



7 Diagram of the Tomytec TM-20 unit.



8 Drawing of the new floor that will be 3D printed.

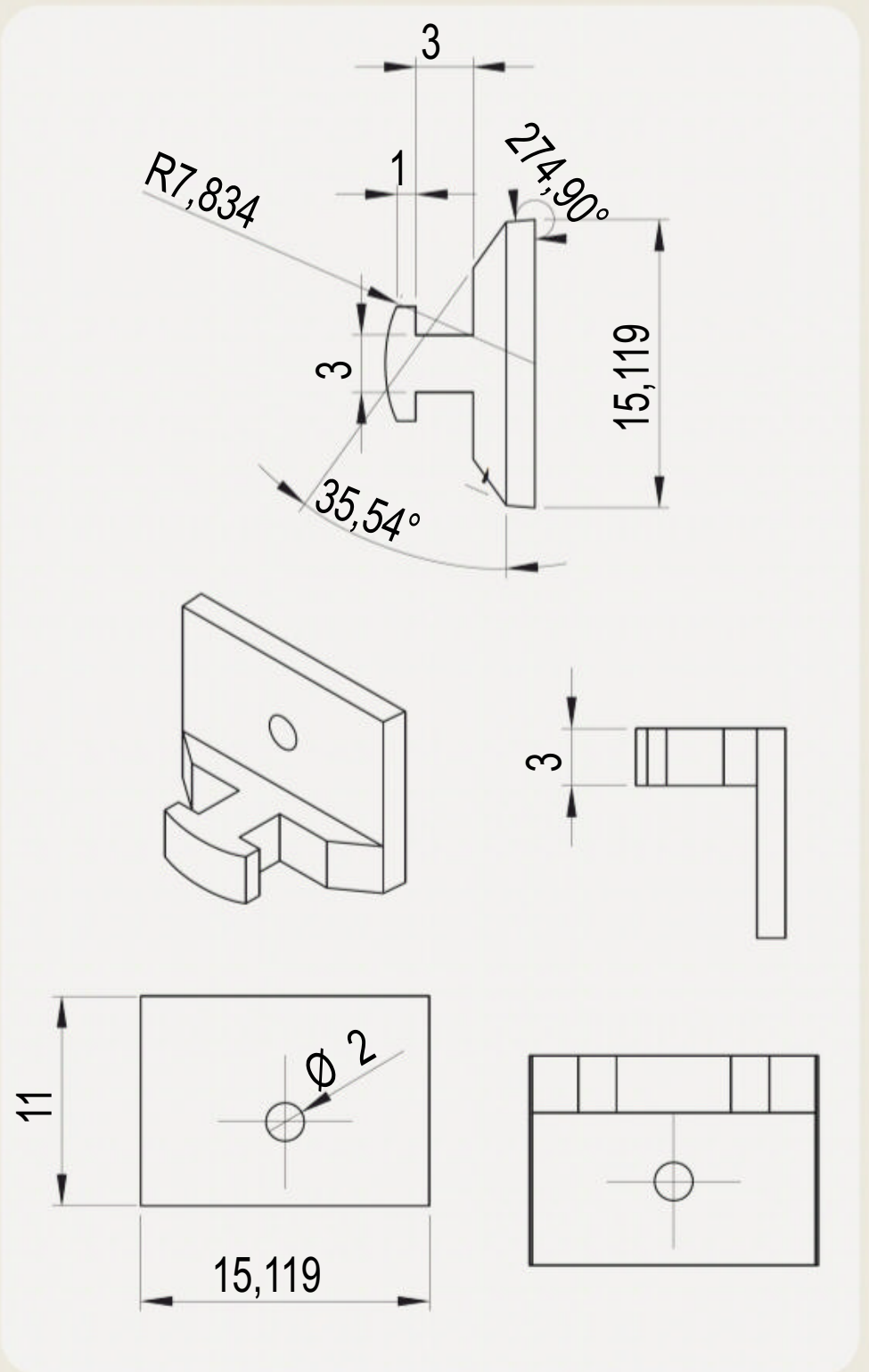


Parts to be fabricated
Naturally, the Tomytec driving mechanism and the body don't mate that smoothly! So I drew an intermediary part (which I have named the <<new floor>>) into which the Tomytec chassis slots, this floor fitting in turn inside the body and holding everything in place. Having decided to 3D print this part in FDM using

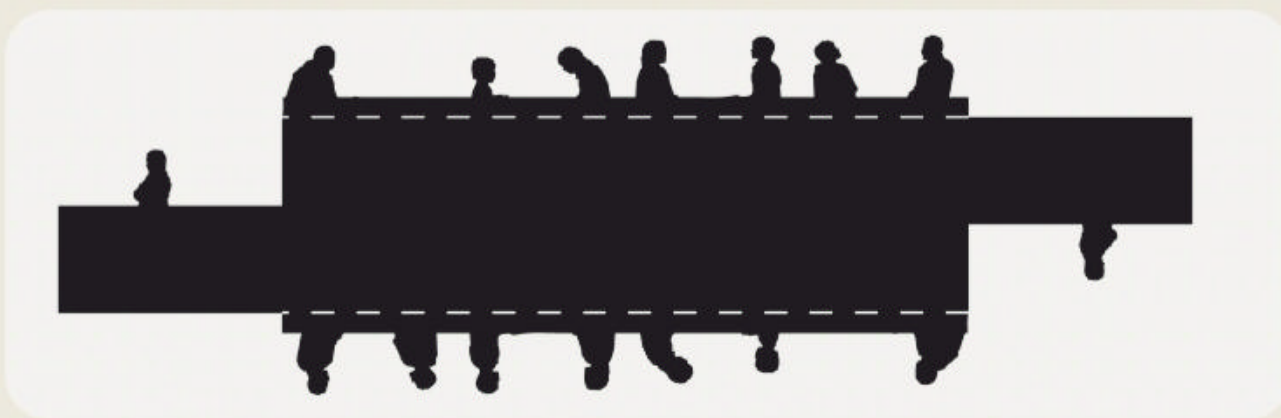


9 The Dagoma hard at work. The print is grey for the photo, black for the railcar!

my Dagoma printer (see special issue N° 71 of Loco-Revue, dealing with computer-assisted manufacturing), I was obliged to do so in three parts: the new floor and the two buffers. The parts are held by screws: two to hold the driving chassis on the floor (four holes are foreseen, but two are amply sufficient), two to hold the floor onto the body, running through the headlamp apertures and the parts carrying the buffers. I could also have manufactured this "mock floor" by assembling plastic sheet parts or by machining it. ■■■



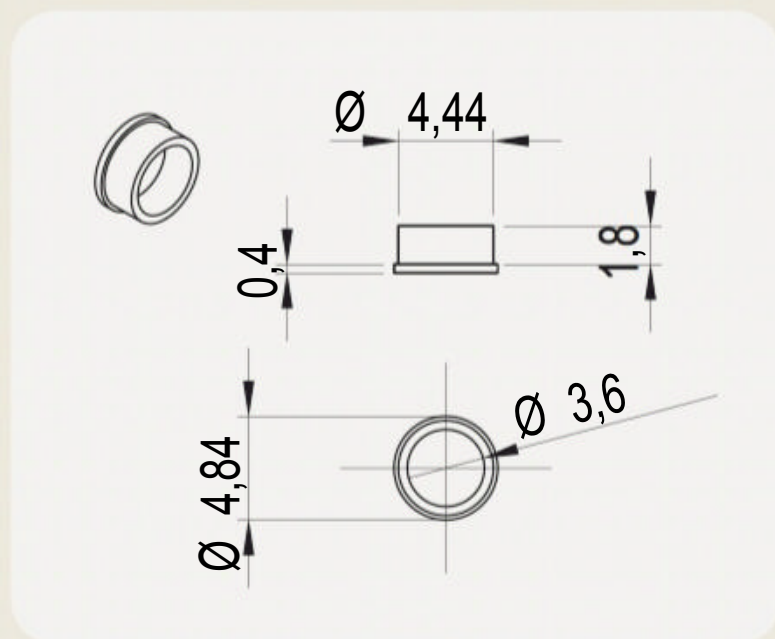
10 Plan of one of the two buffers that need to be made.



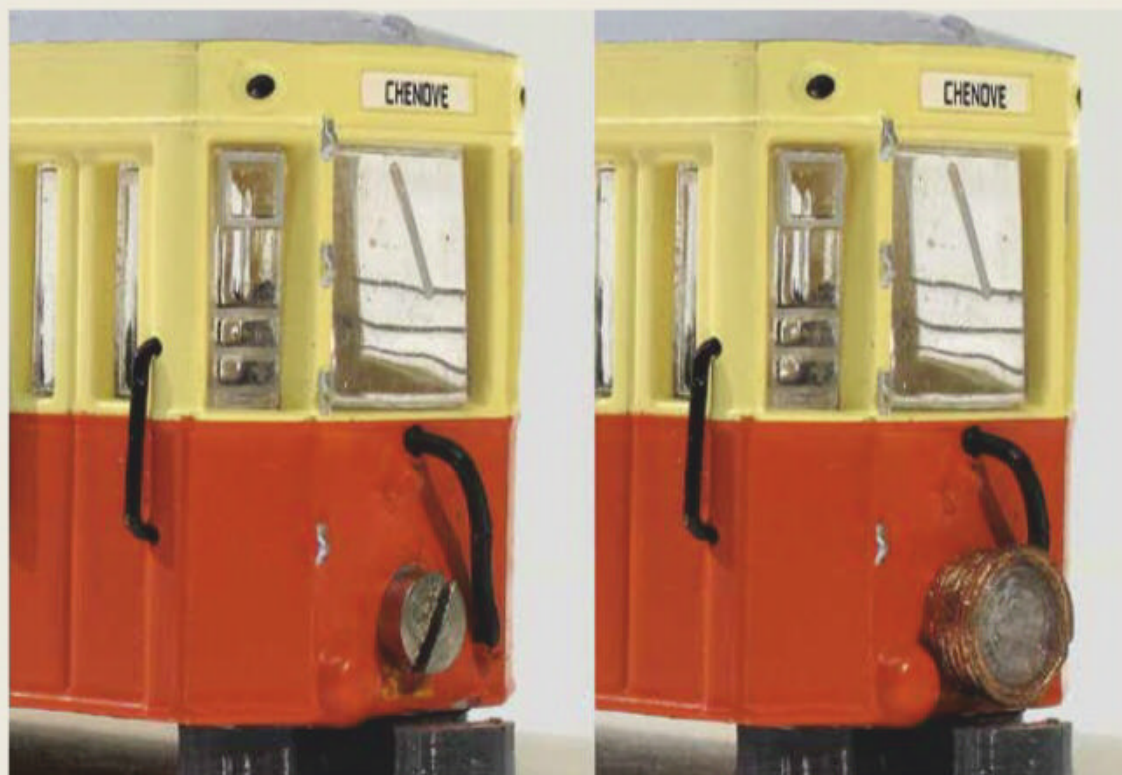
11 Drawing of the figure silhouettes to be cut out of black drawing paper.

12 Display of the various homemade parts.





13 Diagram of the headlamp that will conceal the outside screws.



14

The front of the new railcar and its headlamp which conceals the screw head.

Passengers, and off we go!

I decided to make the passengers and the drivers in silhouette form, cut out of black drawing paper using my Silhouette Portrait A4 cutting plotter. Once the silhouettes are folded and fitted over the

motor, the impression given is satisfactory. I could also have glued the "busts" of seated figures to a sheet of plastic... To finish off the job, I made two mock lamps, 3D printed in "transparent" wire, actually just translucent, which fit over the screw heads that hold the body in place. ■

The TM-20 can handle tight curves, here 140mm radius Egger-Bahn sectional track.



The mine of dreams

This is an old micro-layout that Enrico Boniforti describes today. A micro-layout he built after visiting an exceptional industrial site. Pull on your hiking boots!

Text: François Fontana based on input from Enrico Boniforti
Photo: Enrico Boniforti

The Mine of Dreams could be described as an 0 scale narrow gauge micro-layout, used as a showcase and test bench for specific rolling stock. But is also a fine model that conjures up memories of an incredible mining site.

Enrico Boniforti: This micro-layout is an evocation of the former Drinc line in the Vale of Aosta. The line is still in ■■■

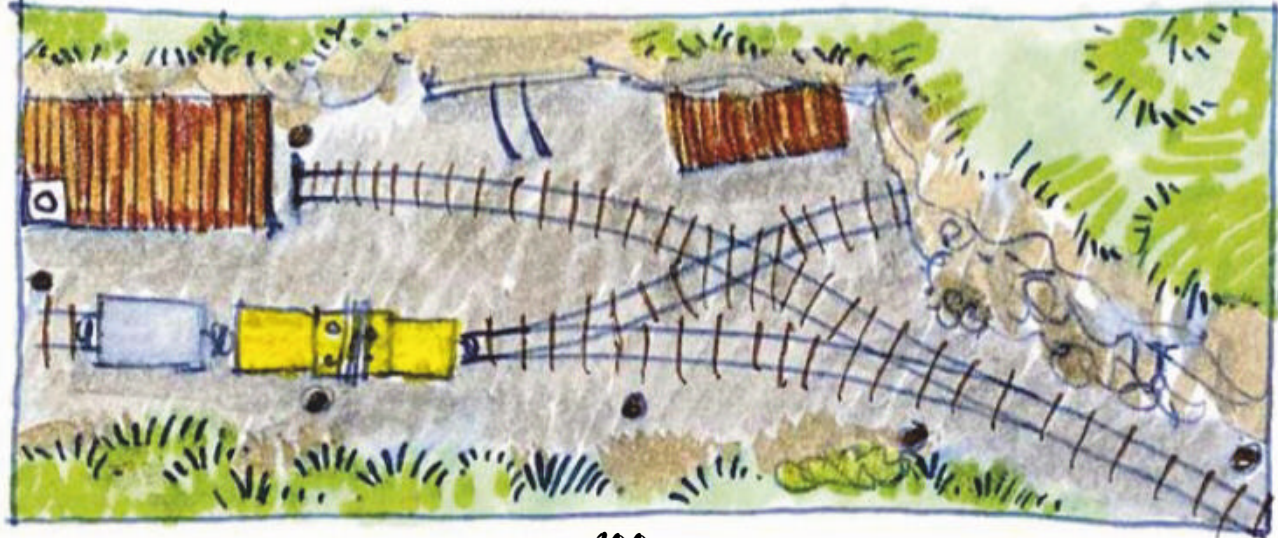


The incredible crocodile with its two trolley poles! The small articulated locomotive is parked outside the office.

0-16.5 Layout



Despite being 6730m long, the tunnel has a very cramped loading gauge, its opening covers a surface of just 8.5 m²!



Layout Plan

... existence, and a few years ago it was even refurbished with a view to operating it as a tourist railway. Sadly, and despite investments having been made in the project, including buying new rolling stock, everything has since been totally abandoned, for bureaucratic reasons!

François Fontana: Tell us something about this mountain railway!
EB: The 900mm gauge line was 12km long and ran under the Drinc pass, hence its name, via a 6730m long tunnel. Designed to carry iron ore, it was electrified in 600V DC. A plan was mooted to convert it for carrying skiers between Cogne and Plan-Praz.

The layout at a glance
Scale: Zero (1/43.5)
Gauge: 16.5mm
Dimensions: 100 x 40cm
Inspiration: the Drinc line, Vale of Aosta

Overview of the layout.





The wagons are from various sources, including H0 scale skips modified for 0 scale narrow gauge.

The Trélazé steeple-cab loco is a guest engine. But it doesn't look in the least out of place.



line leading to the cableway used to transfer the ore down into the valley. The layout's dimensions are 100 x 40cm. The infrastructure is Styrofoam, something of a novelty when I built the layout 30 years ago. The 16.5mm gauge track is entirely home-made. I also modelled a former mining gallery, now walled off.

FF: You run some fairly weird stock on the layout?

EB: I modelled the original little locomotives. Purely for fun, I fitted them with trolley poles instead of the prototypical ■■■



0-16.5 Layout



The layout could not be simpler: two turnouts and one crossing. It depicts the gallery mouth, seen to the right, and the initial stretch of the line.

■■■ pantographs. I also enjoy running a steeple-cab engine from the Trélazé slate quarries, built by my friend Roberto Zucca. It's known as the "TGV" for "*très grande vétusté*" [great antiquity]! [Editorial note: the construction of this type of model was described in Issue 475 of *Loco-Revue* in... 1985]. The wagons used are commercial skips, which I modified. So, I expect you are going to ask what exactly is mined here? Nothing but dreams: Modellers' dreams! ■



This little electric locomotive, with its huge bonnets, and tiny cab that used to be crowned by a lozenge-shaped pantographe, is truly incredible.



The steeple-cab engine seen hauling Bachmann skips. The overhead wire is prototypical.



The A1 railcar of the CFD **DE LA CÔTE-D'OR IN H0-12**

A signature vehicle of the *Chemins de fer départementaux de la Côte-d'Or* (CDCO) network, the A1 railcar known as "Saurer" simply had to be present on Philippe Muzeau's H0-12 layout. As this model was never produced, he decided to scratchbuild it, and tells us how he proceeded!

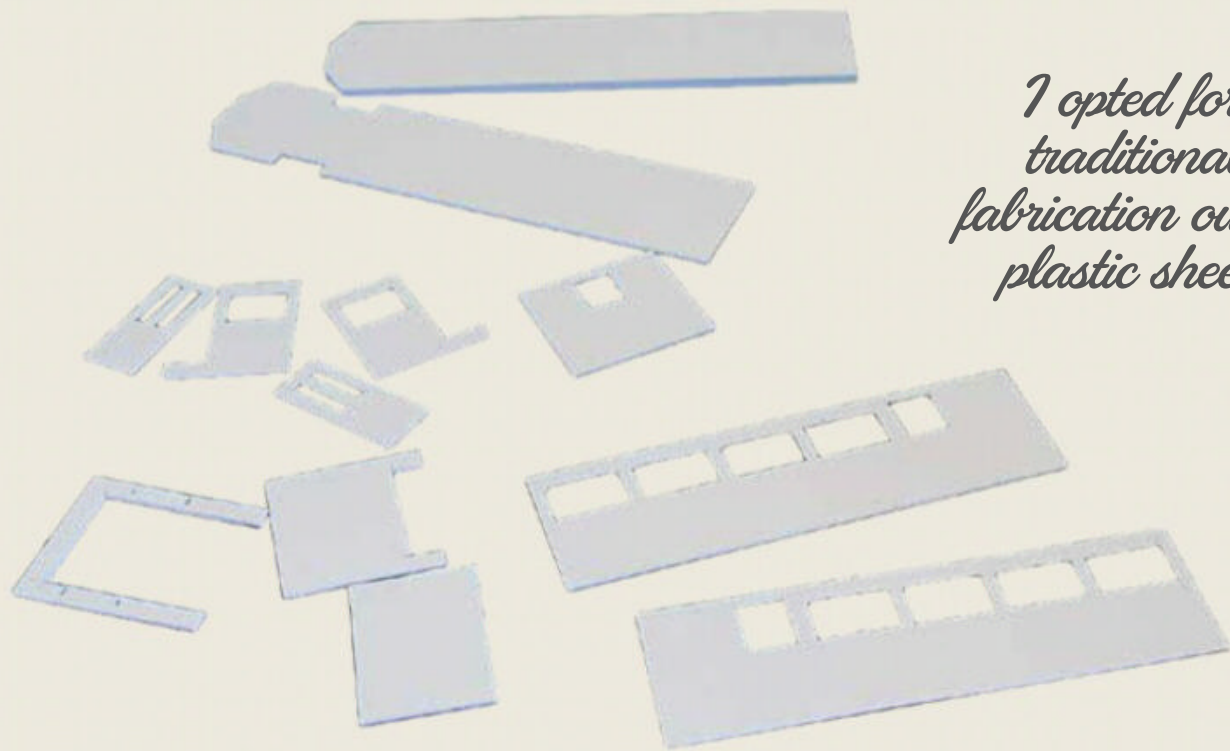
Text and illustrations:
Philippe Muzeau

A huge metre gauge network, the *Chemins de fer de la Côte-d'Or* (CDCO) extended at its peak over no less than 357km. All that remains today are a few buildings and civil engineering works. To evoke this network, I built the station of Bligny-sur-Ouche in 1/87 scale, and it had to be served by a railcar that was typical of that railway, the A1, known as "Saurer" because of its motor.

Before getting started

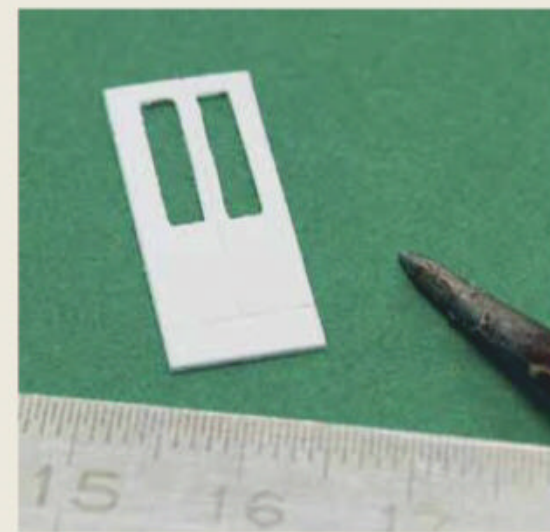
Documentation is scant. The book *Histoire des Chemins de fer départementaux de la Côte-d'Or* published by Editions du Belvédère deals with this railcar. The fourth part of this book also features a very useful diagram, but studying it carefully shows that there were differences between the diagram and the prototype. Issue N° 155 of the magazine *Chemins de fer régionaux et urbains* (1979) also deals with this railcar, and publishes a slightly touched up picture of it. Finally, my online research led me to discover a bad quality rear view of the machine. The body of the scale model is built out of plastic sheet, while the driving mechanism calls on parts from the Interfer range. ■

THE BODY



I opted for traditional fabrication out of plastic sheet.

1 The sides and front panel of the body call on 0.5mm thick sheet. I chose this thickness because it is easier to cut out the many openings. What is more, the thin sides will make the glazing almost flush. We start by cutting out all the necessary body parts and by drilling out the holes where the handrails will fit.



2 Before assembling the various parts of the body, we engrave the four doors of the railcar, using a dry point. This job would be awkward or even impossible after the panels have been assembled.

MAIN SUPPLIES

Chassis

Copper-clad epoxy
0.5mm diam. brass wire
Lead offcuts

Body

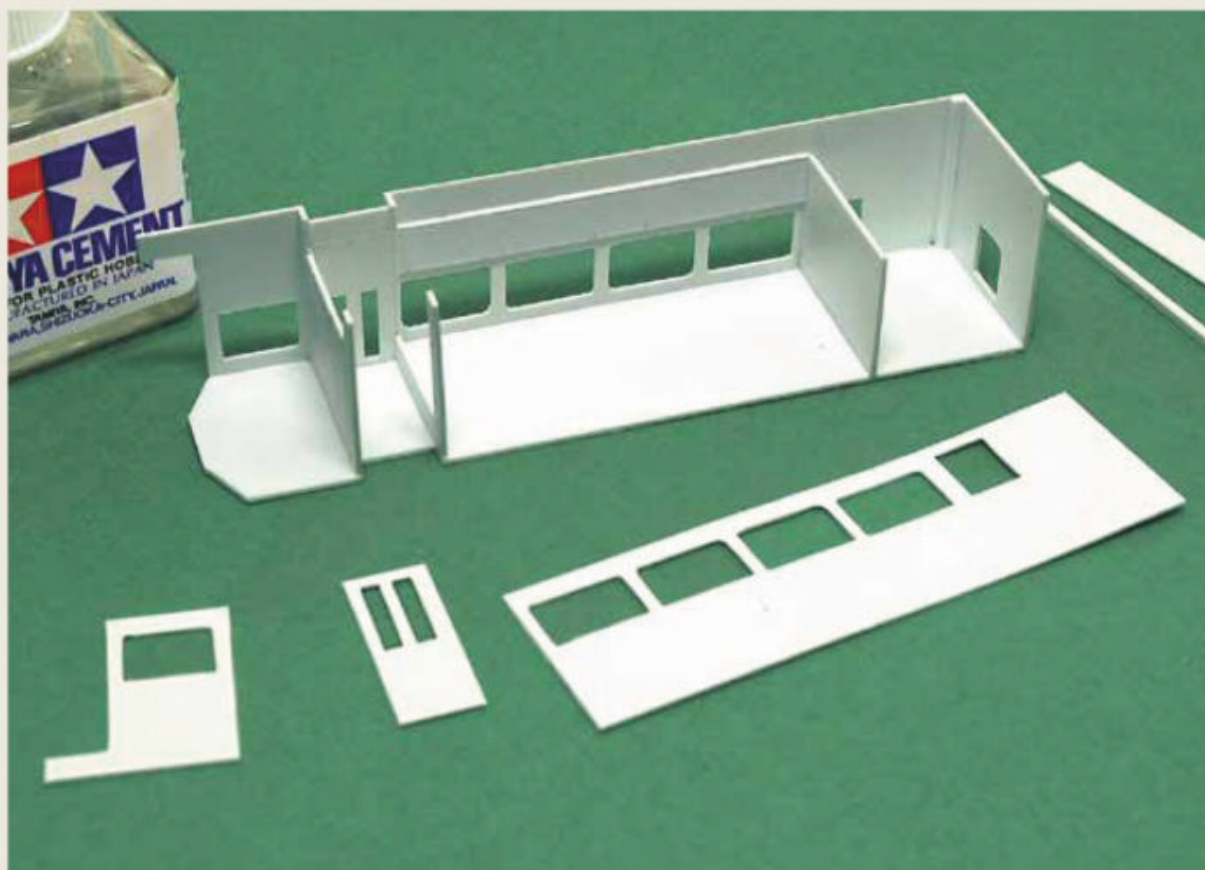
1.5mm, 1mm, 0.5mm thick plastic sheet
Transparent plastic sheet
AMF 87 ventilator ref. A173
Interfer lamps ref. Y5247
1 horn
1 windscreen wiper
Glue, putty

Driving mechanism

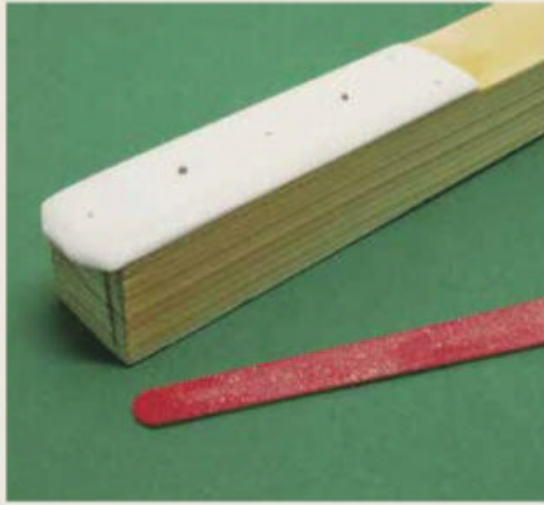
Interfer geared axle with 6.3mm diam. wheels, ref. Y5201
Interfer carrying bogie ref. Y 5104
Interfer motor ref. Y5150 and silicone connecting tube

Decoration

Preiser figures
Primer, paint, silken varnish (AMF 87)



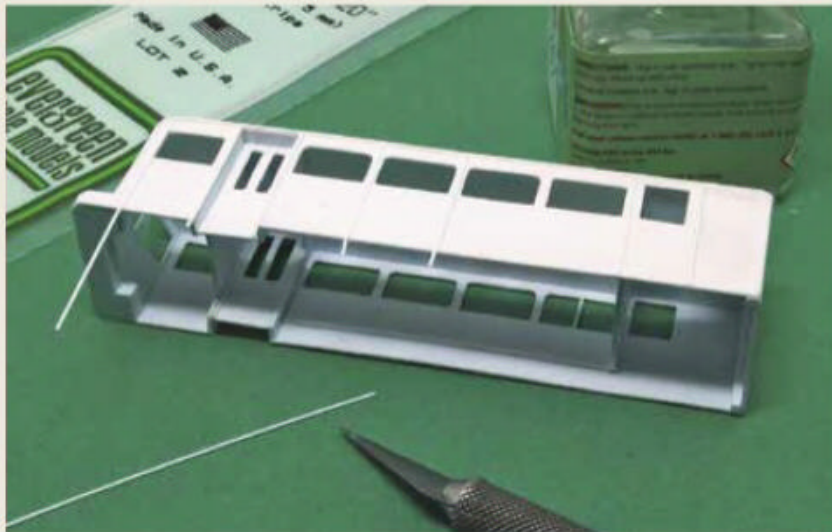
3 We can start assembling the various panels, **parts 6 to 9**, that make up the body, and the doors **parts 10 and 11**, by gluing them to the edge of the roof **part 1**, made out of 1mm thick plastic sheet. Rather like boat-building, the body sides are glued onto frames, the rear **panel 2**, and **parts 3, 4 and 5**. Assembling the body is concluded by the driving cab, which consists of **parts 12 to 14**, glued at the top, once again along the edge of the roof, and on the bottom, on the cross-beam consisting of two superimposed 1.5mm thick pieces of plastic sheet, **part 15**.



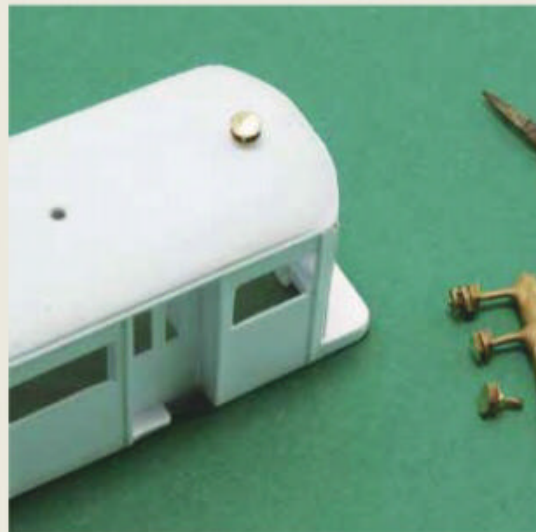
4 The roof consists of two identical parts (1.5mm thick plastic sheet), **part 16**, glued to each other. Using fluid adhesive to ensure these parts are properly glued together is essential. We can then put the roof into shape by sanding it. To make this job easier, I fixed the assembly to a 26mm thick piece of wood. Make sure that the angles of both sides of the roof are identical.



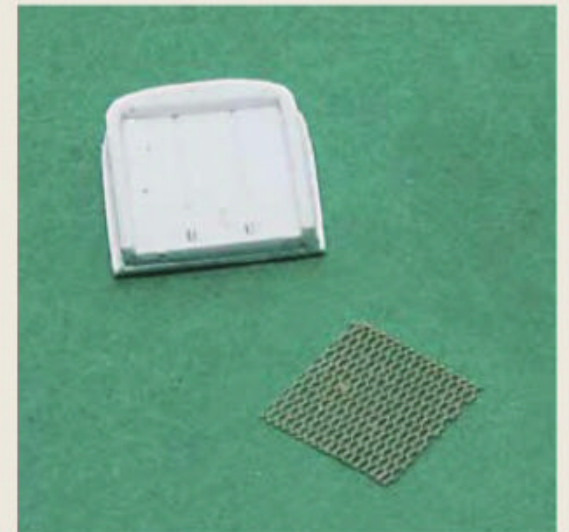
5 Then comes the time to glue the roof to the previously assembled body. Once again, fluid adhesive should be preferred to ensure both assemblies are solidly glued together. Take care to properly adjust the front of the roof to the front panel of the body. Use modeller's putty to finish off the seam between the body and the roof.



6 Observation of the builder's photo of the railcar shows that the body sides consist of several panels fitted with seam covers. These will be modelled with Evergreen strip ref. 100. These strips are fitted on either side of each opening. Take care, it would seem the rear panel has no seam cover. On the other hand, two seam covers are visible on the front of the body.

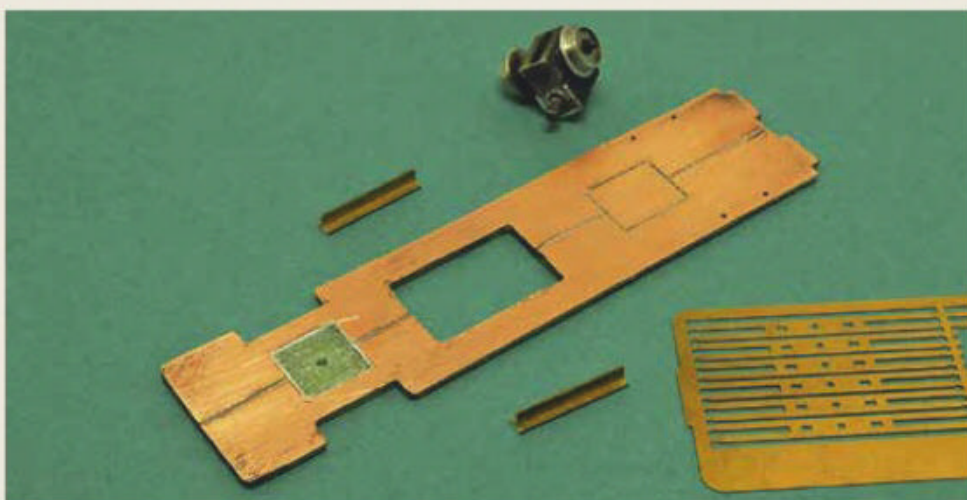


7 The body of the Saurer is almost complete. It is just missing its ventilators, which are from the AMF 87 range (reference A 173). These turbine-shaped ventilators are designed for refrigerated vans, so I cut off the top part to make them look like those fitted to the prototype Saurer railcar.

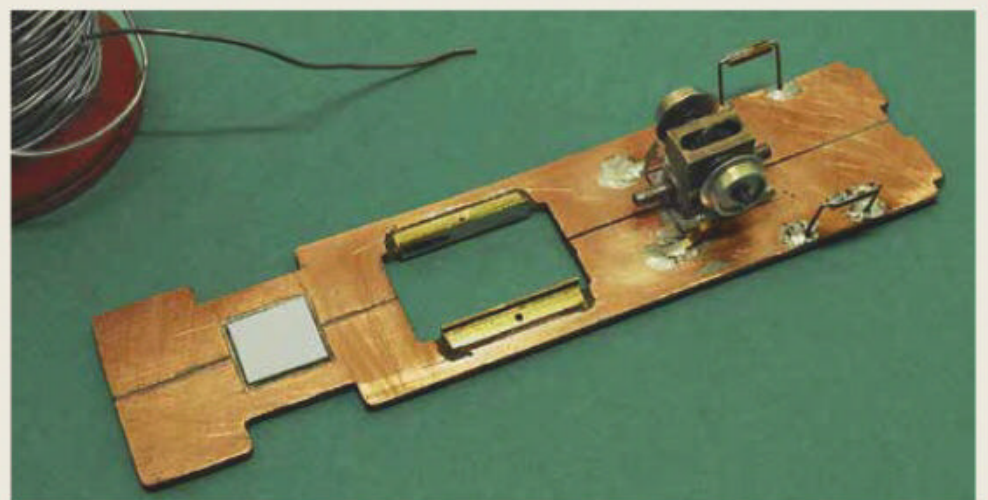


8 The radiator is fitted with a fine mesh protecting grille. Attempting to reproduce the Saurer badge found on the prototype is, in my view, hazardous...

CHASSIS AND DRIVING MECHANISM

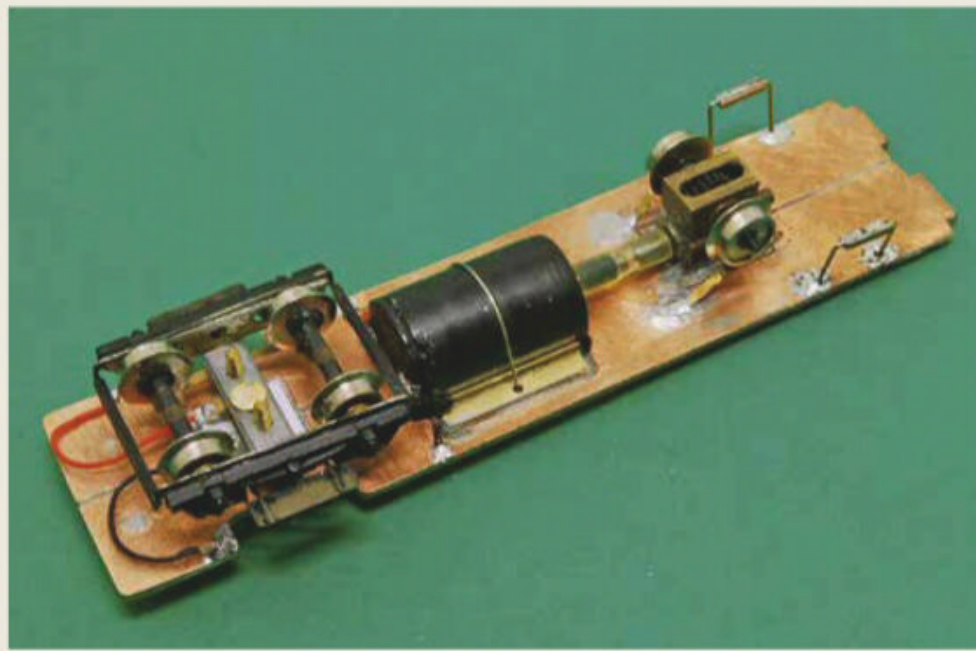
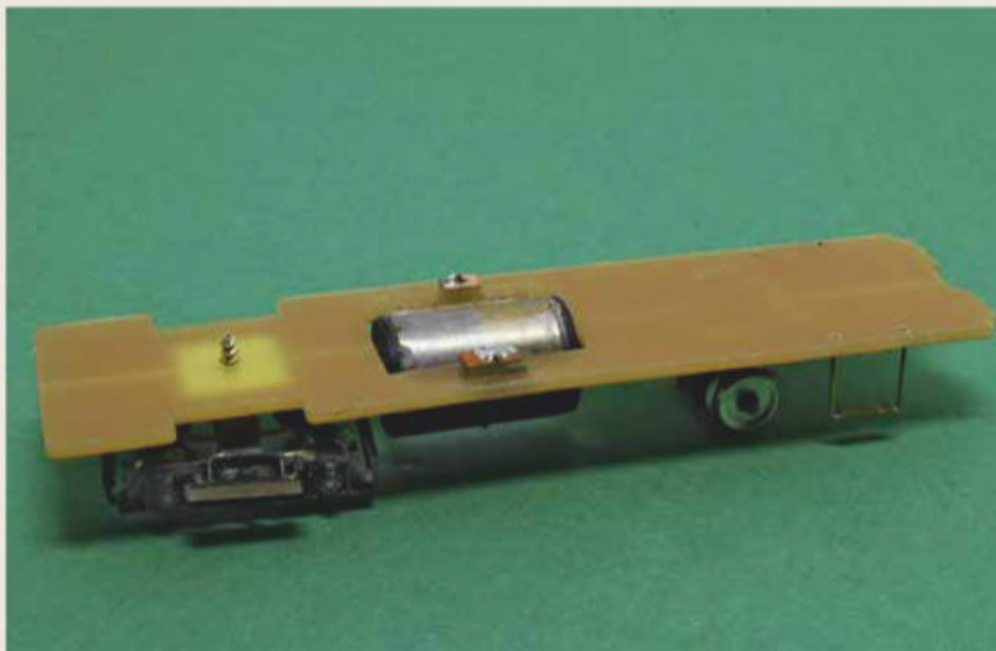


9 For the driving mechanism, we shall use parts from the Interfer range (carrying bogie, motor and geared axle) that will be fixed onto a chassis made out of a sheet of copper-clad epoxy. The copper is sliced to insulate both sides as well as where the gearing will be fixed. Where the bogie pivot is located, the copper coating is removed so that a square of plastic sheet can be glued in place, to avoid any risk of shorting once the bogie is fitted.



10 The geared axle is soldered in place, together with two wipers. On each side of the motor's location, a length of brass L-girder is soldered in place to reinforce and improve the positioning of the motor. These girders are soldered in spots insulated from the remainder of the copper coating. The rear steps, made out of 0.5mm diam. brass wire and U-shaped strips, are fixed to the chassis.

Motive power



11 We can now fit the carrying bogie, to which steps have been added. The motor is simply held in place by a piece of brass wire soldered to off-cuts of copper-clad epoxy glued to the floor side of the chassis. It might be necessary to add a plastic sheet shim to raise the end of the chassis to the proper level.



12 Hornblocks are soldered to each side of the driving axle to allow for the fixing of purely cosmetic axle brackets. The latter can be from your scrapbox or made out of plastic sheet. The official diagram provides no information about the jacks that are part of the lifting mechanism at the back of the railcar, so I opted to ignore this system, which in any case cannot have been very visible.

THE A1 RAILCAR

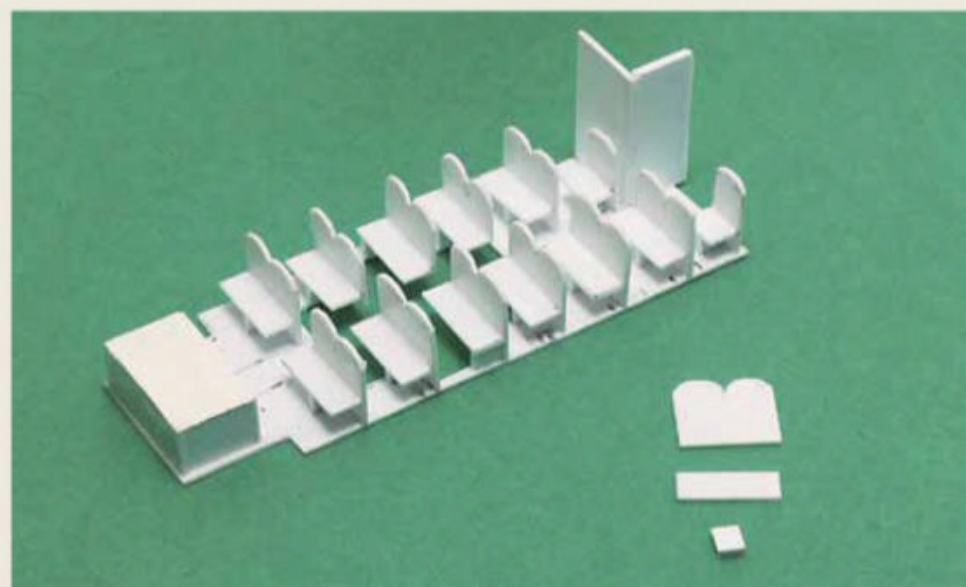


In December 1932, a request for proposals was issued by the operating authority of the CDCO network for the supply of two railcars. Two companies were awarded the contract: the «Société des automobiles Marius Berliet» and the «Compagnie française de matériel de chemin de fer», each having to supply one railcar. In April 1935, the latter company delivered the A1 railcar to the railway. On the network, this machine was known as the «Saurer railcar», because of the Saurer monogram that graced the radiator of the 6 cylinder, 90hp motor that drove the railcar. Offering seating capacity for 30 passengers, this railcar featured a carrying bogie at the front and

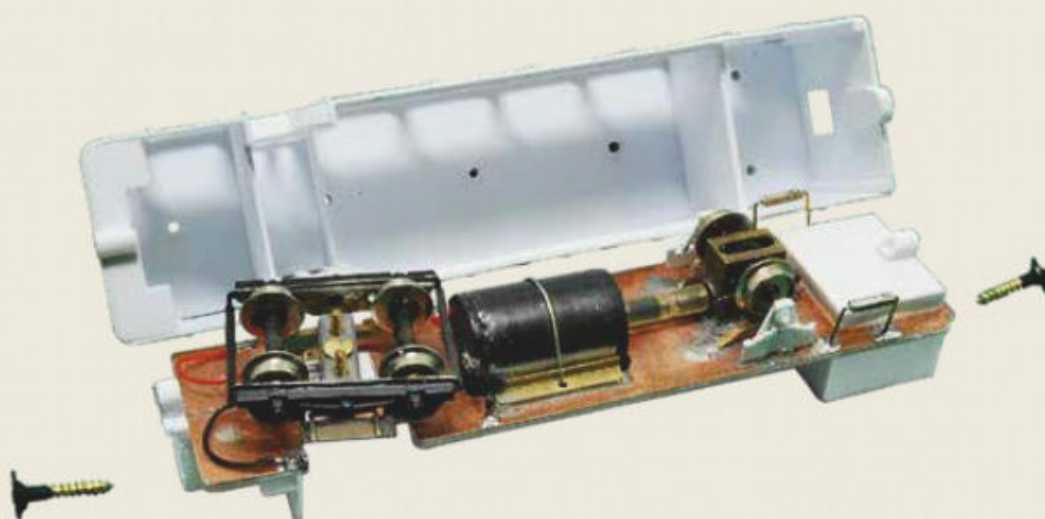
THE BALLAST AND iNSiDE FURNiSHiNGS



13 As it is now, our Saurer railcar is relatively light, which won't help with electrical pick-up nor with running qualities. Therefore, we shall use every nook and cranny to fit ballast. This ballast is essentially bits of lead inserted into plastic sheet casings that fit inside and under the luggage compartment, on the access platform and where the motor is located. Make sure they are not too high, so they are not visible behind the glazing.



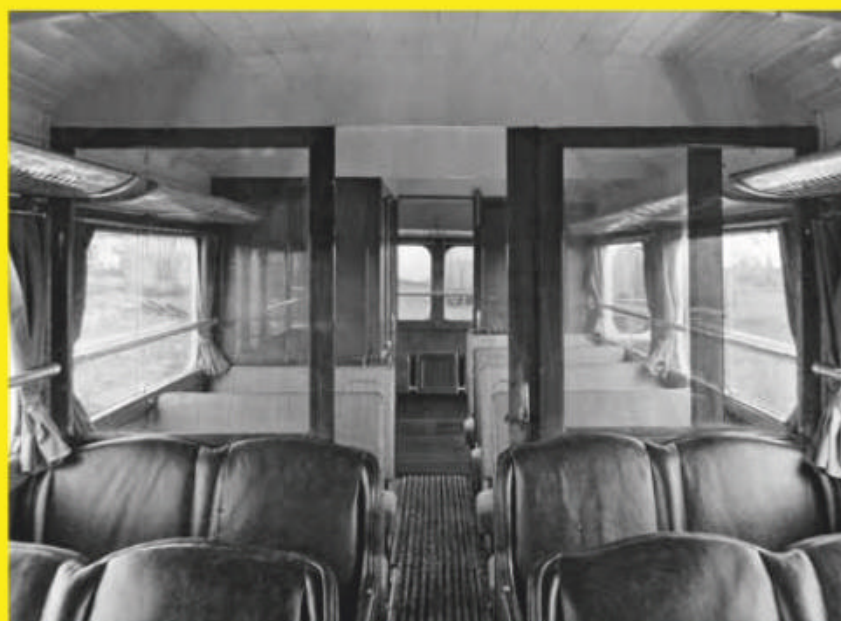
14 If the builder's diagram is compared with the few pictures that exist, it can be observed that there are a few differences. For example, the toilets are not on the left hand side of the luggage compartment, but on the right hand side and further forwards. In a similar way, the photograph of the inside of the passenger compartment shows that the seating is not arranged as shown on the diagram. It even looks as if the specified 30 seats are not there. The inside furnishing of our model will be made out of 0.5mm thick plastic sheet. Each seat consists of 3 assembled parts, this assembly being glued to the floor.



15 To hold the body onto the chassis, we use the central buffers that will run through brackets fixed to both the chassis and the body. The buffers can be made out of small brass screws to which a buffer head will be soldered. There is no need to plan for a coupling system, as the single driving axle would not be powerful enough to haul a trailer or a wagon...

Photos : Gaby Bachet collection

a single driving axle at the rear. It was 10.565m long and 2.40m wide, with a wheelbase of 5.800m. In working order, it weighed 13 metric tons and featured toilets and a luggage compartment. As it was fitted with only one driving cab, it could be turned on the 4.50m diameter turntables found on the railway thanks to a device that lifted the rear of the chassis off the rails. Assigned at first to the lines in the north of Côte-d'Or, it was withdrawn during the war due to fuel shortages and hidden from the Germans. It was put back into service after the Occupation ended and was withdrawn for good in October 1947 when the railway put an end to passenger services.



DECORATION



16 I was unable to find any information regarding the decoration of the Saurer. Period photographs show that the lower part of the body was painted in a dark shade, and the upper part in a lighter one. Red/grey, red/cream or even brown/cream liveries are all possible.



17 An airbrush is a precious tool for painting the body. The inside furnishings and the chassis can easily be painted with a brush. The network was built by the Compagnie Sud France, also in charge of the Chemins de fer de la Provence system. On the CP, the railcars were, at one time, painted in brown and cream. Such a livery could be plausible for our own railcar.

FINISHING TOUCHES



18 To represent the handles used for moving the windows, a simple blind hole drilled with a bit held in a pin-vice will be enough. On the front panel, above the central windscreen, a circular object can be seen (an electric bell for roadside running ?). It can be made out of a 3mm diam. piece of plastic sheet. The lamps, from the Interfer range, as well as the horn (fixed below the driver's windscreen) and a windscreen wiper are fixed in place above the driver's window.



19 I found a poor photograph showing the rear of the railcar where a pipe can be seen running up the back of the body on the right hand side, that could be an exhaust pipe. It can be easily reproduced using brass wire or a length of Evergreen strip shaped on a moderately warm soldering iron. Finally, a few figures can be installed in the passenger compartment.

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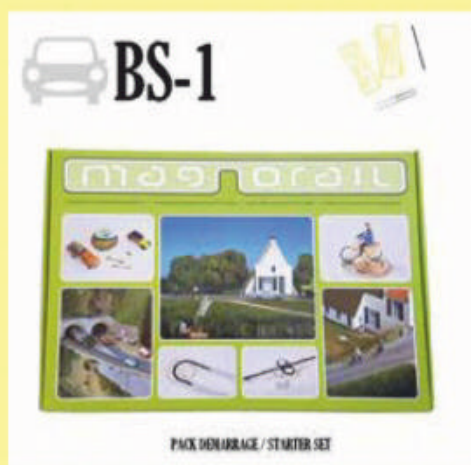
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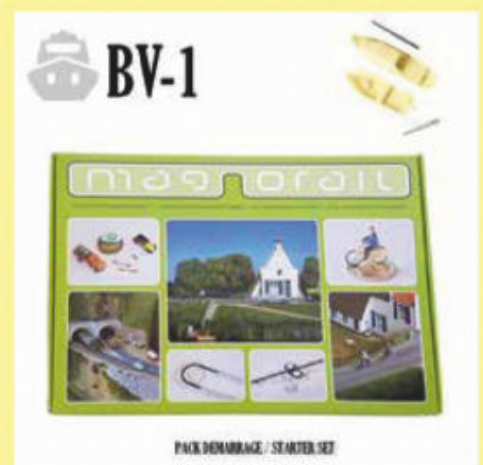
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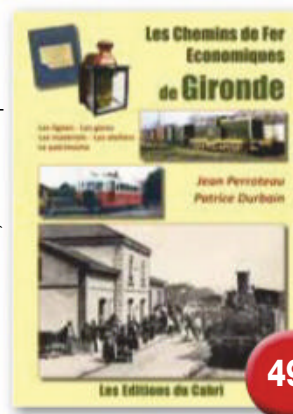


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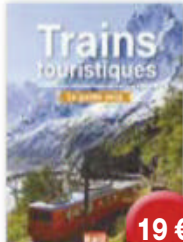


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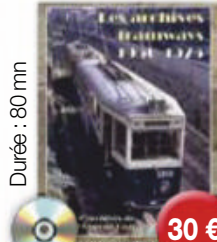


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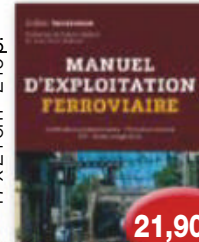


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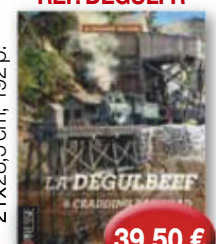


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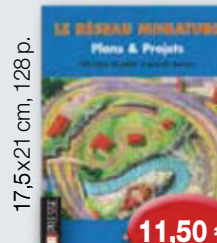


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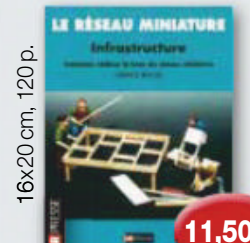


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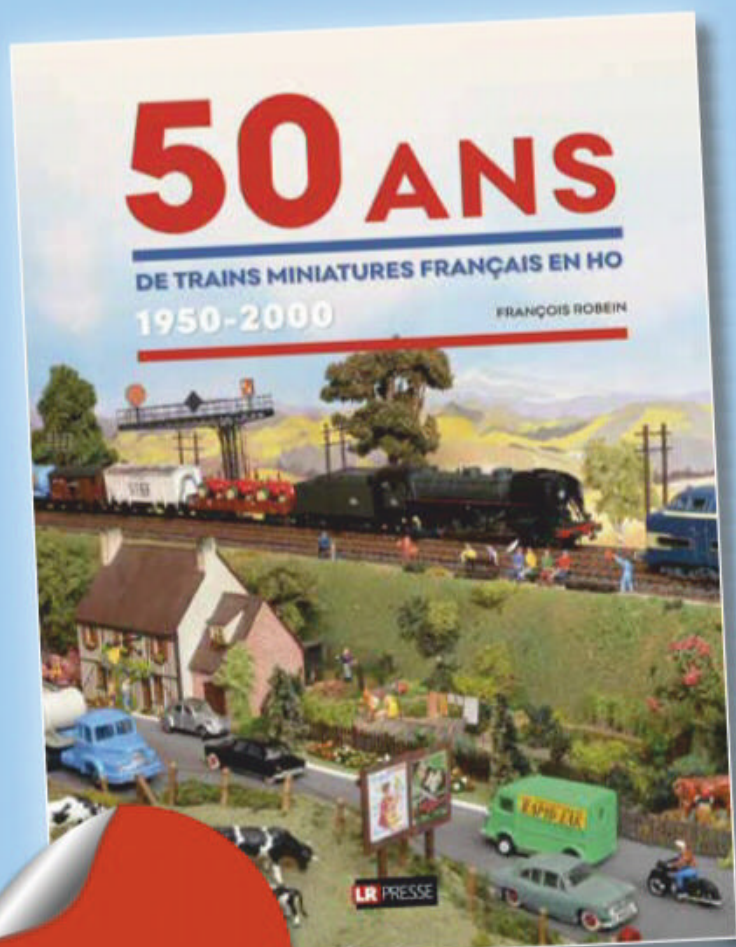
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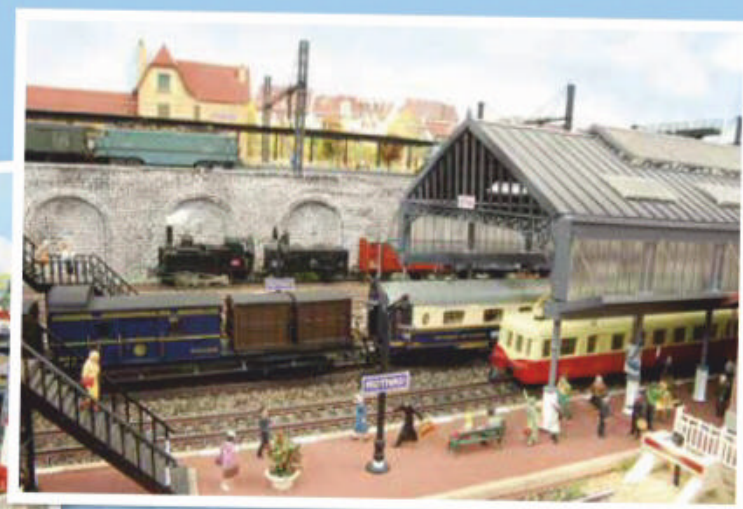
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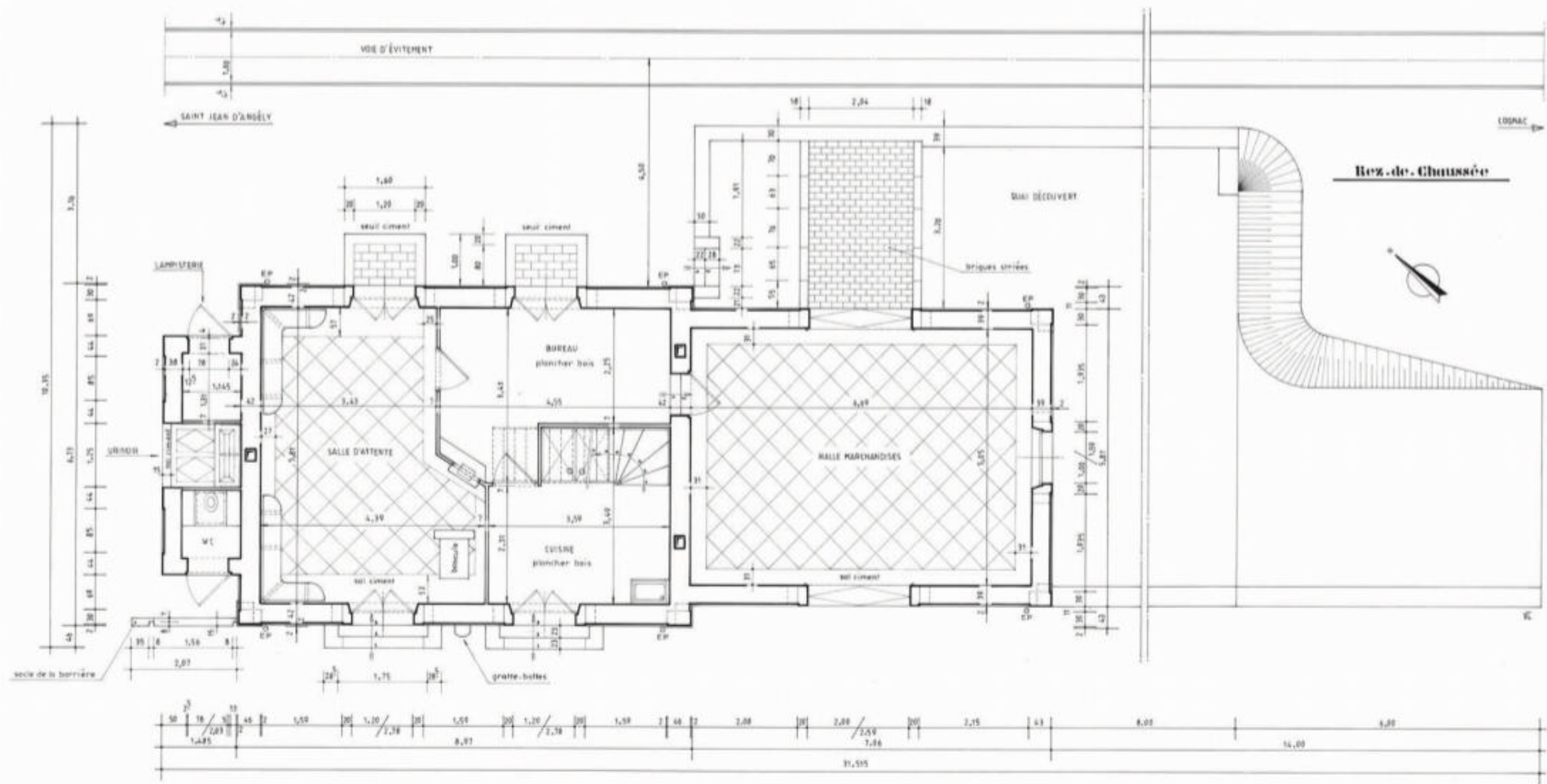
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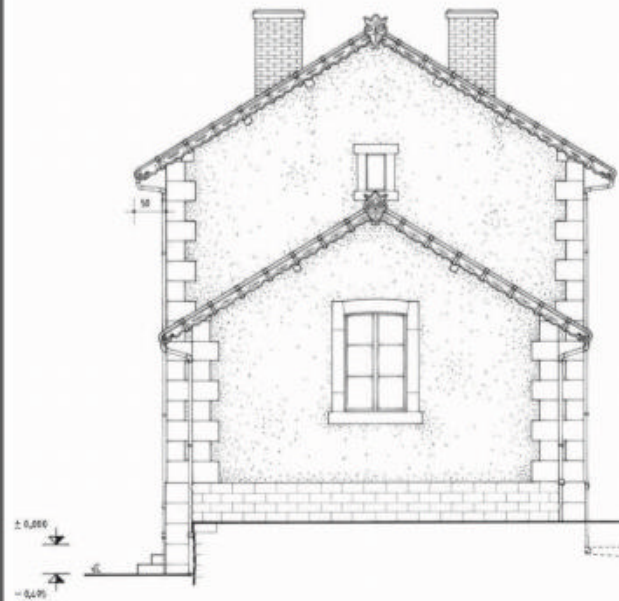


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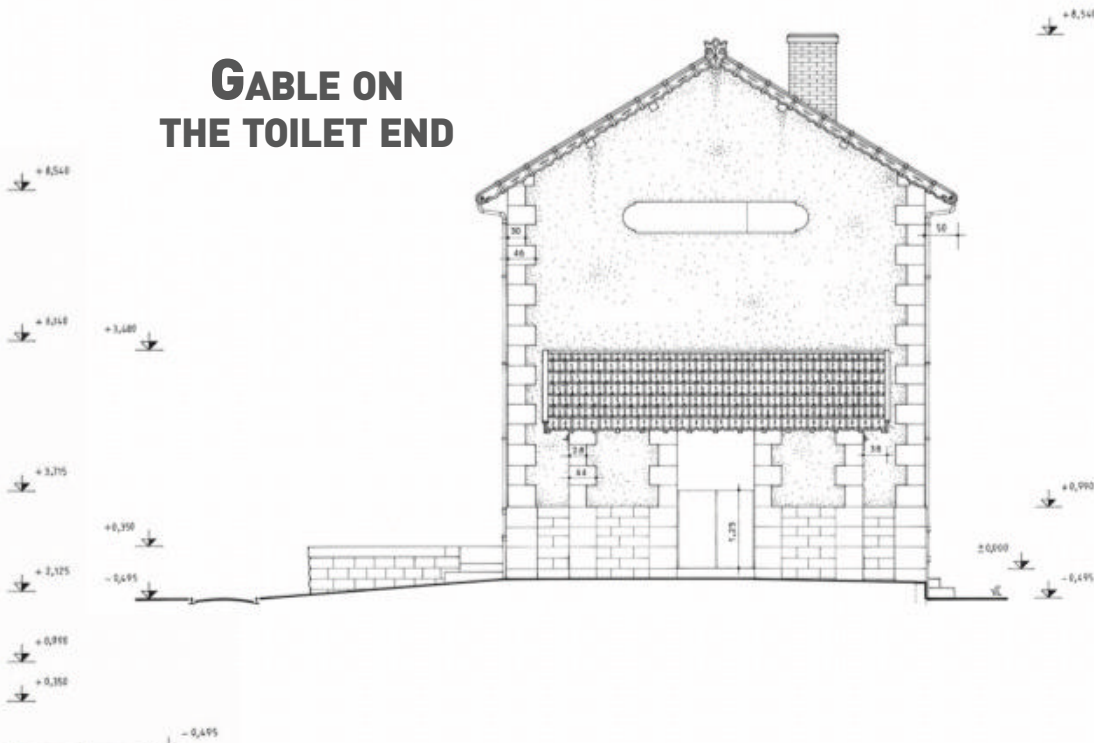
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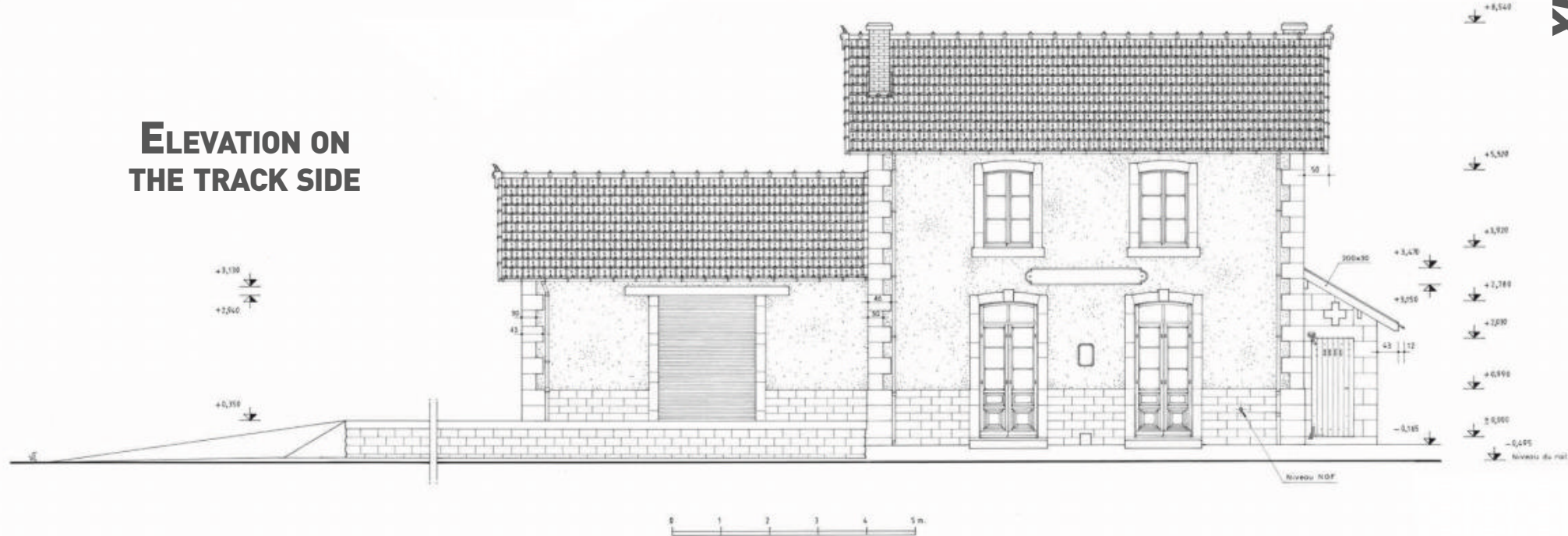
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