

# FRANK HORNBY – An unwitting pioneer in small gauge toy trains – Raylo and Liliput compared.

Nicholas Oddy

Today, we tend to think of Meccano Ltd as an observant follower, rather than a leader of smaller than O gauge model/toy railways. The Dublo system, magnificent though it was, was greatly informed by 'prior art' by Bassett-Lowke (Trix Twin) and Märklin. However, less well recorded is that Frank Hornby was instrumental in the creation of one of the first of these systems prior to the Great War and the first to be offered in electric after it. He was never to talk about it and it has been largely forgotten, in fact his place in it has been inadvertently written out of history.

In November 1910 Frank Hornby applied for a patent, No 27,533, for a novelty table game. The game entailed a clockwork loco running at high speed round a complicated circuit of track with sprung crossings and points. To 'win' the operator had to keep the loco from derailing or ploughing into a buffer-stop by pulling off the various point blades from a central, illogically arranged lever frame as the loco went round the circuit. The game was to be called 'Raylo', the railway equivalent of 'Meccano', but there the similarity ended. If there is any evidence needed that Hornby was no gifted designer or inventor, but rather a man with determination who had only one good idea, it is this. He took ten years to come up with another idea... it was Raylo...yet he was still determined to develop it.

The game was large and it required manufacturing processes that were alien to Meccano at the time. Therefore, it was largely made of components that were 'put out' to sub-contractors. The game comprised a wooden box decorated with paper litho on which was mounted the track, a single sheet of pressed tinplate lithographed to look like a landscaped layout. It seems likely that the paper was commissioned from one of the commercial chromolithographers that Meccano employed for their showcards and posters, such as Banks & Co of Edinburgh. Meanwhile, the track probably came from Hudson, Scott & Co in Carlisle, one of the leading UK makers of decorative tin boxes, who handled much of Meccano's litho tinplate. The delicate quality of the printing and precision of the pressing is typical of their work. Hornby was well used to commissioning printed tinplate. His understanding of the importance of attractive packaging for the first Mechanics Made Easy (MME) sets had resulted in these being packaged in colourful tin boxes, varieties of which continued to be made into the Meccano period. The Raylo game was contained in a 'leather bound carton' (as the 1915 *Book of Prize Models* describes it) of which no example is 'known', but it is pictured in Meccano publicity. The lid's label is reproduced in Graebe *The Hornby Gauge 0 System* at p8. It is decorated with an image of a generic 4-6-0 steaming for the left-hand field, similar to that used on the lids of the first Hornby Clockwork Train sets. The 'leather bound' element refers to what seems to have been an outer covering of mottled brown paper, in the manner of those used for No. 1 and No. 2 Hornby Train sets in 1921-24. Thus both the inside and outside of the Raylo box lid later informed Hornby packaging. The only components of the game that seem to have been made by Meccano were the connections between the lever frame and the point blades, which included old-stock, folded MME strips, and, presumably, its woodwork.

Raylo was already listed as an asset in a surviving account sheet dated 28 Feb 1910, albeit at only £1-8-9 it must have been very nascent. It had developed far enough for the patent application in November and presumably the design process was concluded before a complete specification was deposited with the Patent Office in May 1911, the final granting being in July. The accuracy of the specification suggests that, by early-mid 1911, component production could have been well underway. The patent can be viewed on and downloaded from the European Patent website <http://worldwide.espacenet.com> using the reference GB191027533.

Typical of Meccano Ltd, production seems to have been based on a desire to manufacture, which overrode any more

rational consideration of whether or not the company had the capability or need to do so. I might develop this thesis further and suggest the game was a total aberration in terms of product development. It had nothing to do with the parent product and one wonders what it was that first inspired Hornby to think it up and, moreover, what it was that he believed was so good about it to merit a patent and taking it into production. Its complete irrelevance to the Meccano system meant that, in actual fact, there was no urgency or imperative to produce it and, indeed, every reason not to. The game was large and very complicated; consideration of the number of wood-screws used in assembly gives one an idea of the amount of time and effort that had to be poured into its manufacture, the diametric opposite of Meccano itself. Yet, this was to be Meccano's first attempt to expand its product range by diversification. One can only assume that the success of Meccano suggested to Hornby that **any** Meccano product would be successful.

As it was, although it seems that all the components of the game had been manufactured by mid-1912, the game did not reach the market until 1914. It would seem that few were sold before production was halted to make way for far more lucrative ordnance contracts during the Great War. Today, only two complete games and a handful of locos are 'known' to have survived. Remarkably, those two games that do survive are different; the (presumably later) version has the woodscrews replaced by slotted runners. By any reckoning Raylo must have been an expensive dead-end, ill-conceived in the first place and aborted by circumstance. Yet, the faith that Hornby had in the product is reflected in it still taking pride of place on Meccano's bill-heads in 1919, even though the product seems never to have been advertised post-war.

Chris Graebe proposes that the reason for the delay between patent and introduction was one of logistics. While the components could be commissioned, there was no space for their assembly. It could be that the game became a victim of Meccano's success. The Meccano factory in West Derby Road had been acquired on a three-year lease in 1909. Hornby himself describes the situation there in 'The Life Story of Meccano' (*Meccano Magazine*, March 1932, pp172-173):

'I well remember how impressed I was with the size of the building...even after all our machinery and benches were installed the uncovered floor space that remained gave me a fright!...Never had I made a bigger miscalculation! The popularity of Meccano increased at a rate I had never contemplated in my wildest imaginings... I added machine after machine until the vacant floor space was completely covered; and still the output was not large enough. ...In less than two years the position in this factory became similar to that in the old one.'

It might be that while there was a clear prospect of space being given to diversification in 1909-10, which encouraged the design of Raylo, the pressure placed on the works by rising demand of the parent product meant that no space was available by the time the component parts of the game had been commissioned and produced. It was only after the move to the comparatively palatial factory at Binns Road was completed in 1914 that production could be started. The fact that Binns Road offered space for extensive product diversification is corroborated by the area which Frank Hornby claimed he allocated to the production of the Tin Printed Clockwork Train in 1914-15, some 24,633 square feet. (See HRC 248, Feb 2008, p17.)

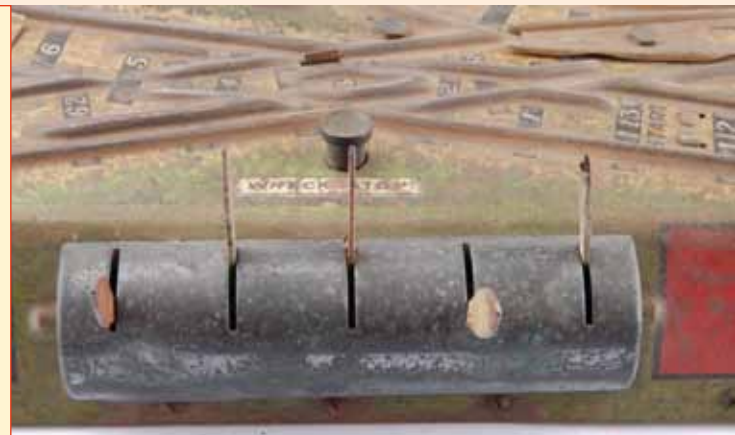
Compare all this to the rhetoric Hornby comes out with in 'The Life Story of Meccano' (*Meccano Magazine*, Feb 1932, p93), in which he suggests that it was an early aim to concentrate all production and not use out-sourcing, and we can see a discrepancy in his position. While he might have been convinced that he should concentrate manufacture of MME in his own premises, he was clearly quite happy to sub-contract most, if not all, of very complicated products at the time of Raylo and indeed until the Great War. I suspect that it was his unwillingness to admit to this, in the light of his experience from 1914-22, which determined the position he took when he was writing ten years later.

**RAYLO in pictures**

**A view of the top of the Raylo game. The whole surface, plus the bent-down section with "Raylo" lettering, is a single piece. The arrangement of the four trap sidings can be seen. Although at first the switching sequence needed seems complicated, in practice it takes only a few tries to allow the loco to make a full circuit.**



**Left: underneath the board, showing the lining paper. Right: the Wreck Stop, visible on the far side of the crossing.**



**Left: the loco storage pit, reducing the depth needed for the (missing) lid; and below left, the loco in place. Right: close-up of a point. Below: the operating side of the game.**







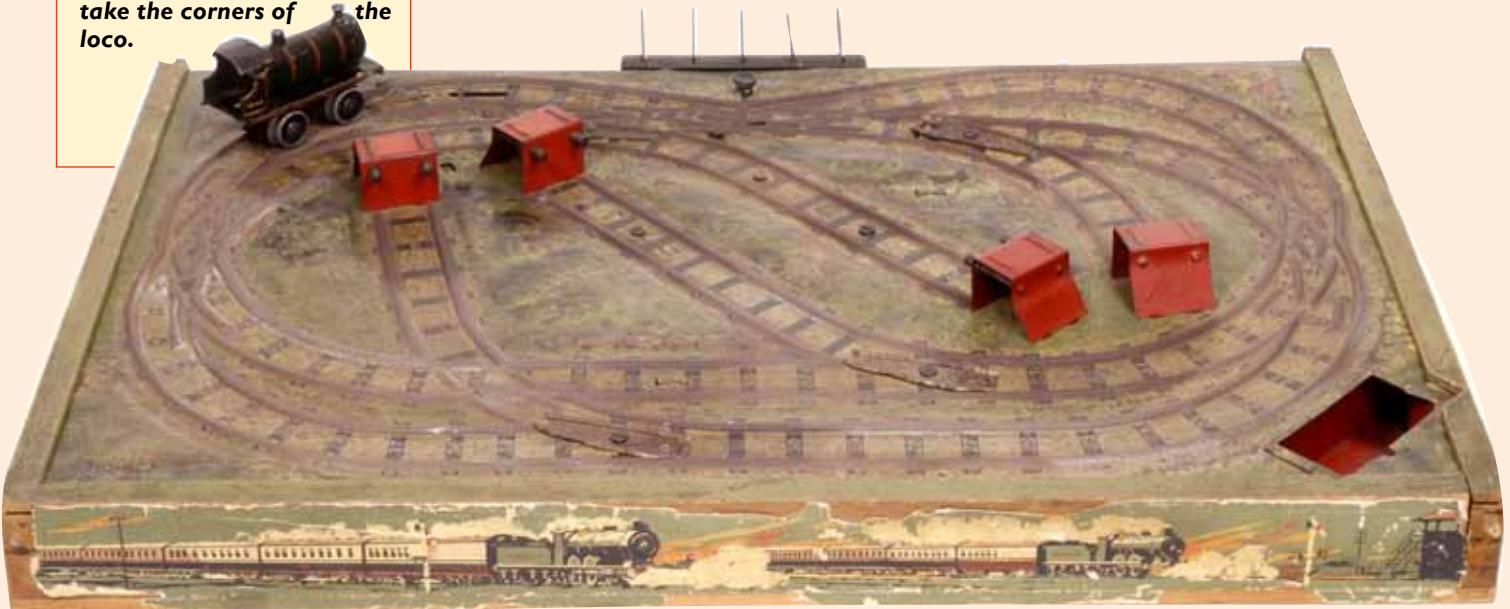
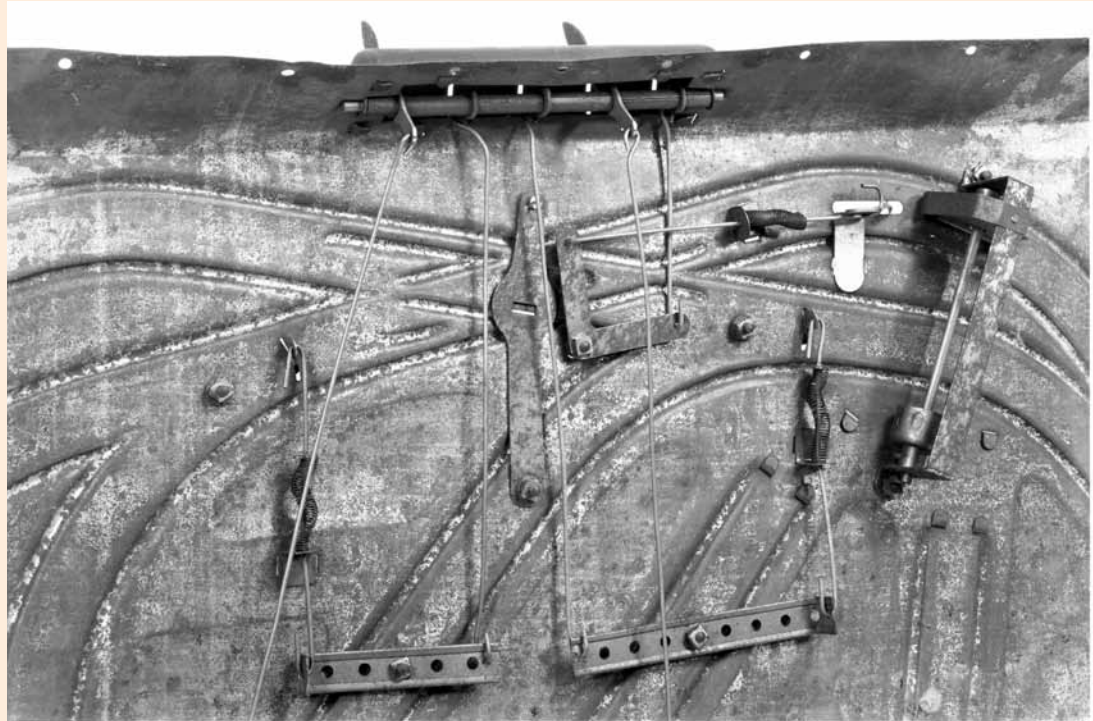
Above and left: the other three sides of the box, and the litho papers used to decorate the woodwork.



Right: Jim Gamble's Raylo, shown removed from the wooden case to display the simple but effective inside works. Note the use of pre-1909 Mechanics Made Easy strips (Meccano-type strips but with folded edges) as pivots.

Below: Given the long time that Raylo was under development, it is perhaps not surprising that Jim's example differs from the one on the previous page. Instead of the mitred ends on the narrow-topped sides of the other Raylo, Jim's (below) has wide wooden edges more simply joined, but slotted to take the metal of the top, thus not having the lines of screws on the top surface.

The sides by the loco pit therefore have to have triangular cutouts to take the corners of the loco.



While the Raylo track and associated casing could be commissioned from UK sources, which were probably already familiar to Meccano, the locomotive posed a problem. The patent application suggests that, at the time of its drafting, presumably in mid-1910, Hornby was uncertain of the nature of the locomotive. While it prioritises an 'engine', the patent offers the alternative of a ball which would be rolled round the track by tipping the board...an unlikely possibility given the size and design of the board, which the patent drawing shows to have point blades and buffer stops identical to those that were realised. Assuming that the descriptor belongs to 1910 and the drawing belongs to the complete specification, the final form of Raylo, with a locomotive, had been decided by May 1911. The complexity of the track-plan demanded a small gauge, one inch, to prevent the game from becoming unwieldy. The game required a long-running, but very small, clockwork locomotive, robust enough to stand the destructive nature of the game, thus it needed to be of a high build quality. In 1910-11 tinplate clockwork toy manufacture was dominated by Germany to the extent that there were no serious manufacturers in the UK. In 1907 Hornby had turned to James Bedington & Son/ Tessted of Birmingham for steam engines to power MME models. As Ken Brown points out (*Factory of Dreams* pp 32-36) Percy Bedington was instrumental in popularising MME, his family firm were significant metal toy makers in their own right; but, such companies worked in brass and rarely made more than steam toys. Hornby therefore turned to the German manufacturer, Gebrüder Märklin of Göppingen, from which were also commissioned the first Meccano clockwork motors.

What informed this choice of partner is a matter of conjecture. In 1910-12 Hornby had no negative experience of German toy manufacture. It might be noted that Märklin's clockwork motors tended to be over-engineered, but under-powered and relatively expensive; the first quality might be what appealed to Meccano over performance or cost. A cryptic reference to 'Spring Motor' in the February 1910 assets, valued at £20-0-0, might suggest that commissioning the Meccano-Märklin motor (introduced in 1912), was underway at a very early date making Meccano's links with Märklin go further back than is often assumed. If this is the case, then an approach by Hornby to Märklin for the Raylo loco in early 1911 would have been an obvious and simple one, part of a rapidly expanding interest in Germany closely tied to a business relationship with Märklin. Meccano registered their trade name in Germany and established an office there in 1912. By the outbreak of the Great War, Meccano had gone so far as to make an agreement by which Märklin would manufacture Meccano for distribution within the German Empire and its sphere of influence.

Of course, in any decision of this kind there might lurk the spectre of prejudicial reasons that Hornby looked to somewhere other than Nürnberg, where the bulk of tinplate clockwork toy manufacture was concentrated. Whatever, we know that relationships between Hornby and the biggest of the Nürnberg manufacturers, Gebrüder Bing, would soon be soured by Bing's launching of 'Structurator' simultaneously with Meccano's venture into serious partnership with Märklin, something that seems too much of a coincidence not to be related.

It seems certain that the Raylo loco was conceived as a stand-alone commission; but, having built it, Märklin looked to exploit the tooling further, by using the loco as part of a conventional toy train system. The Märklin version was first offered in their wholesale catalogues of 1912. The Märklin product was called 'Liliput' and took its gauge directly from the Raylo game. This Märklin called '00' gauge, the first use of the term, but to claim it was the first ever smaller-than-O toy railway system would be wrong. What did make it different was that the Liliput range had

a solid quality more commensurate with better-end O gauge, thus stepping towards the sort of 00/H0 of inter-war Märklin and Dublo, rather than staying in the realms of light-weight tin toys that characterise many of its predecessors. The fact that Liliput was advertised as early as 1912 could suggest that the initial order for Raylo locos from Meccano was not substantial enough to justify the setting-up costs. But, equally, Märklin might just have seized the opportunity to develop the product, given that the Liliput concept hardly impinged on Raylo. In the writing of toy train history, all too often dominated by product introduction and first appearance in catalogues, the fact that Raylo was not put into production immediately has served to confuse many into thinking that Liliput came first and Raylo second. It is clear from the objects themselves and the early date of Hornby's patent that the opposite was, in fact, the case.

Illustrated here is one of the 1912 Liliput locos, alongside a Raylo loco. It will be noted that the Liliput loco is identical to



the Raylo in almost every respect. The mechanism is the same, robustly built with broad, cut gears, thus making it largely immune from the saw-like action that bedevils the pressed gears often found in clockworks of this size. It is fitted with the disc wheels designed for the game, but massively over-width, overweight and overscale for the purposes of a normal toy train. The significant difference is in the wheel settings. For Raylo the forward wheels are set radially. As the loco goes round a fixed circular track in one direction, the setting has the effect of reducing friction and speeding the loco up on curves, but making it eager to jump off-course on straights and badly-set points. Raylo needed wheels with strength for rough treatment, width to handle the radial setting and the loco's tendency to 'pull' when not on compatible curves, weight to hold the loco on the rails, and large diameter to add greater speed. For Liliput, all Märklin did was fix a simple pin coupling to the footplate and set the front axle square, but the wheels look ludicrous in the context of a toy train system, confirming the sequence of the product being designed for Hornby first, then utilised by Märklin second. The legacy of the Raylo concept went far further than the wheels. The Raylo loco needed no hand brake and therefore there is no provision for one. Rather surprisingly this was overlooked in Liliput, which has no hand brake either.

To make sure there was no confusion between the products, Märklin ordered revised litho printings for the Liliput loco, without the RAYLO cabside name. Unfortunately this adjustment did not spread to the LNW style white lining, making it incompatible with the red-lined tender, which followed continental practice. Indeed, the sequence is also obvious when we look at the stock. The loco is undoubtedly UK profile, but the tender looks as if it belongs to something more Germanic, while the coach is purely continental, suggesting a different time of design and a different market intention. Furthermore, the wheels of both tender and coach are far more appropriately proportioned for the Liliput concept of a toy train system.

While it is questionable if Meccano placed any further orders for Raylo locos, Märklin carried on making Liliput for well over a decade. The range was expanded to include a goods train of three different wagons, extra rolling stock and, during the early stages of the Great War in 1915, an ambulance car and an armoured train. The latter has an armour casing built round the



loco body, the massive wheels looking more the part in this context. Not surprisingly, it is now amongst the more desirable Märklin train products on the collectors' market. Finally, in 1919, an electric motor was introduced for the Liliput loco. This was state-of-the-art miniature toy train making, supplied wound either for 4 volt or high voltage, but the mech had large side assemblies to accommodate the armature bearings, some having large exposed brush caps as well, making the loco body look even more under-scale in relation to its wheels. These were now painted bright red, in the German manner and even more prominent, but making a more effective link with the red underframe of the tender. A set of this period is featured in the *Train Collectors' Quarterly* Vol 22 No1 (Dec 1975) at p20. This particular loco is fitted with handrails, which enhance its appearance considerably as they give the loco body more substance.

It is notable that while Märklin catalogues show post-war Liliput locos to have been enhanced by numbers added to their cab-sides as in the above example, many of the electric locos that survive are built using 'Raylo' printings. An example is shown here, with its coach and luggage van. It is later than the one in *Train Collectors' Quarterly*, with wheels that at last have moved away from the Raylo concept, recast in iron with spokes and returned to black, giving them a lighter appearance; but, this version does not have handrails, thus the wheels still look brutal in comparison to the body. As the use of the Raylo name on Liliput locos has been the primary cause of confusion between the two products, it is worth looking at this in some detail.

Under a principle of free trade and a belief in fostering a reinvigorated German industry able to pay off war debts, strongly supported by Lloyd-George, UK trade was quick to be reopened after hostilities ceased. Indeed, there was a complete return to pre-war trading regulations by 11th November 1919. But, Meccano's close relationship with Märklin was never to be revived. During the War Märklin had taken control of Meccano's intellectual property, making Meccano under the Märklin name. Meccano took until 1928 to wrest back its German interests from its one-time partner. (Brown, *Factory of Dreams*: p67.) Even then, Märklin continued production of former Meccano products under the Märklin name but did not enter them into markets in which Meccano had a significant presence (mainly those within the British Empire, France and Scandinavia). Furthermore, post-war issues of ownership were conflated by Hornby's largely negative experience of the Tinprinted Clockwork Train. In this Hornby realised that it was folly to try to compete with German manufacture on its own terms. Meccano products had to be different to give them added value and justify the higher cost of British labour. Henceforth, Meccano would never look to subcontract products to Märklin or any other potential rival, and it would make every effort to avoid subcontracting at all, even within the UK, for even the most trivial components.

It may well be this that caused the demise of Raylo as much as market reception. Effectively, Raylo did not match any of Meccano's post-war product strategy and was quietly forgotten. This was different from the Tinprinted Clockwork Train, which, though plagiarised, was manufactured entirely in the Meccano factory and was not based on sub-contracted components; therefore it continued to be made and listed, while the Raylo Game did not.

As a consequence, the printings for Raylo locos that Märklin was still holding were redundant and Märklin was free to use them as they chose. Thus we find the RAYLO name prominent on many post 1919 Liliput electric locos,

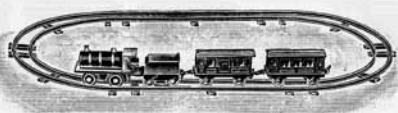
# Liliput-Eisenbahnen mit Uhrwerk-Betrieb.

Kleinste Spurweite von 26 mm = Spur 00.

Zuverlässiger Betrieb. Aufmachung in feinem Karton. Sorgfältige Konstruktion.  
Schienenkreis-Durchm. 33 cm. Kreis-Umfang 4 Schienenlängen.

Spur 00 = 26 mm.  
Liliput-Bahnen.

Spur 00 = 26 mm.  
Feinste Chromo-Lithographie.



930 1. Mk. 2.85 p. St.      930/2. Mk. 8.60 p. St.

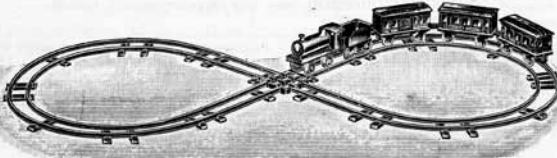
Eisenbahn-Personenzüge, vorwärtsfahrend, mit Hand-Absteller.  
Wagen ohne Sitze, ohne Publikum.

Zug mit Schienenkreis, 1 Wagen.

| No. 930 1. | Loko | Tender  | Personenwagen | Schienen    | Zuglänge |
|------------|------|---------|---------------|-------------|----------|
|            | 930  | 1700/00 | 1701/00       | 1530<br>4 A | 26<br>cm |

Zug mit Schienenoval, 2 Wagen.

| No. 930 2. | Loko | Tender  | Personenwagen | Packwagen | Schienen        | Zuglänge |
|------------|------|---------|---------------|-----------|-----------------|----------|
|            | 930  | 1700/00 | 1701/00       | 1702/00   | 1530<br>4 A 2 D | 37<br>cm |



930 3. Mk. 4.90 p. St.

Eisenbahn-Personenzug mit 8 er Schienenfigur, 3 Wagen.

| No. 930 3. | Lokomotive | Tender  | Personenwagen | Packwagen     | Schienen                              | Zuglänge |
|------------|------------|---------|---------------|---------------|---------------------------------------|----------|
|            | 930        | 1700/00 | 2 St. 1701/00 | 1 St. 1702/00 | 1530<br>4 A, 4 1/2 A, 4 1/2 D<br>1 KK | 48<br>cm |

Einzelteile der Liliputbahnen.

| No. 930.     | Lokomotive, 2 achsig mit Absteller, vorwärtsfahr. | Länge cm | Preis p. Stück Mk. |
|--------------|---|----------|--------------------|
|              |   | 9        | 1.15               |
| No. 1700/00. | Tender, 2 achsig . . . . .                        | 6        | — .30              |

| No. 1701/00. | Personenwagen 2 achsig Farbe rotbraun oder grün | Länge cm | Preis p. Stück Mk. |
|--------------|---|----------|--------------------|
|              |   | 6,5      | — .37              |
| No. 1702/00. | Packwag. 2 achs., Farbe braun                   | 6,5      | — .37              |


Liliput-Schienen. Weissblech, genau und kräftig gearbeitet. 4 teil. Kreis 33 cm Durchm.


| Nr.        | Schienen               | Länge cm | Preis p. Stück Mk. |
|------------|------------------------|----------|--------------------|
| 1530 A 1/2 | Runde Schiene          | 26       | — .13              |
| 1530 A 1/3 | "                      | 13       | — .10              |
| 1530 D 1/2 | Gerade Schiene         | 26       | — .13              |
| 1530 D 1/3 | "                      | 13       | — .10              |
| 1530 KK    | Kreuzung, rechtwinklig | 5        | — .24              |

Above: Nachtrags Katalog L-12 M-12 (1912) reproduced in Baeker, C. et al 'Märklin 4 1909-1912' p361.  
Below: Märklin catalogue from 1915 reproduced in Jeanmaire, C. et al 'Märklin 3 1891-1915' p286, showing the rarest of the Liliput series, an armoured military train and a hospital train.

## Eisenbahnen für den Heeresdienst

Liliput-Form. Spur 00 = 26 mm





along with mismatched loco and tender lining.

Perhaps the most impressive Liliput product dates from this time, a complete model railway with buildings, accessories and full landscaping, not unlike the Raylo game from which it originated. A few more wagons followed, but Liliput was soon outclassed by Bing's cheaper, better proportioned and more comprehensive Table Railway introduced in 1922. Benefitting from design input by Bassett-Lowke and Henry Greenly, the Bing Table Railway was built to 4mm scale on a redefined 00 gauge of 5/8th inch,





Wirkungsvolles dekoratives Ausstattungstück.

Spur 00 — 26 mm



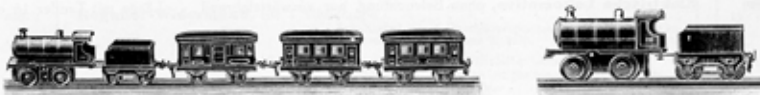
8830/201

**Landschaft mit elektr. Eisenbahn, „Typ Liliput“**

zum direkten Anschluss an Lichtleitungen von 110—250 Volt. Gleich-, Wechsel- oder Drehstrom unter Zwischenschaltung eines Lampenwiderstandes mit Geschwindigkeitsregulator. Das plastische Gepräge und die farbensreiche Bemalung der aus Holz mit Stoffverkleidung hergestellten Landschaft wirkt äusserst dekorativ und effektiv.

Zur Verschönerung der Eisenbahnanlage tragen besonders bei ein hübscher Landbahnhof mit einer elektr. Bogenlampe zur Seite, zierliche Wohnhäuser und Bauernhöfe, eine Gartenanlage mit See und Gartenpavillon und einer grösseren Anzahl Bäume. Entlang der festmontierten Gleisanlage sind Telegrafenanlagen mit Leitungsdraht aufgestellt.

**Allgemeine Ausstattung:** 1 Starkstrom-Eisenbahn 3830/3, Lokomotive mit Tender, 2 Personen- und 1 Packwagen, 1 Regulatorwiderstand 3469/1, 1 Schraubstiftgerät 3498, 1 Fixverbindung 3539/4 SMM, 1 Anschlusschiene STA, 1 Bahnhof 2030/0, 1 elektr. Bogenlampe und Telegrafenanlagen. Grösse 140x100x20 cm.



3930/3

8980

**Elektr. Liliput-Schwachstrombahn — 4 Volt. —**

Betrieb durch Elemente und Akkumulatoren.

Der Elektromotor der Lokomotive ist trotz der kleinen Dimensionen von grosser Dauerhaftigkeit und guter Zugkraft. Nur vorwärtsfahrend. Wagen 2 achsig. Solide Ausführung. Feine Chromolackierung.

| Nr.    | Bezeichnung             | Zuglänge cm | Zusammensetzung der Züge |         |             |               | Schienenanstellung |             |              |                    |
|--------|-------------------------|-------------|--------------------------|---------|-------------|---------------|--------------------|-------------|--------------|--------------------|
|        |                         |             | Lokomotive               | Tender  | Gepäckwagen | Personenwagen | Nr.                | A runde 1/2 | D gerade 1/2 | Anschlusschiene EA |
| 3930/3 | Personenzug mit 3 Wagen | 38          | 3930                     | 1700/00 | 1702/00     | 2 St. 1701/00 | E 1530             | 4           | 1            | 1                  |

Anschlussmaterial: 2 m Leitungsdrabt No. 3534 und Anschlusschiene E 830 EA.

3930 Elektr. Lokomotive, ohne Beleuchtung, nur vorwärtsfahrend . . . . . Länge mit Tender 16 cm.

Schienen siehe Seite 106. Einzelne Wagen siehe Seite 5 des Katalogs.

ASSETS.

|                                  | 1094 | 8  | 9  | 1532 | 19 | 3 |
|----------------------------------|------|----|----|------|----|---|
| Stock Trading                    | 1094 | 8  | 9  | 1532 | 19 | 3 |
| Manufacturing                    | 158  | 10 | 5  |      |    |   |
| Patents, Trade Mark & Copyrights | 2608 | 6  | 6  | 4148 | 8  | 0 |
| Less written off                 |      |    |    |      |    |   |
| Plant                            | 1077 | 1  | 11 | 939  | 7  | 9 |
| Less depreciation                | 107  | 14 | 4  |      |    |   |
| Fittings                         | 318  | 14 | 5  | 286  | 17 | 0 |
| Less depreciation                | 31   | 17 | 5  |      |    |   |
| Press tools                      | 74   | 0  | 0  | 37   | 0  | 0 |
| Less depreciation                | 27   | 0  | 0  |      |    |   |
| Formation Exp                    | 55   | 0  | 0  | 41   | 10 | 0 |
| Less written off                 | 31   | 19 | 0  |      |    |   |
| Spring Motor                     |      |    |    | 19   | 9  | 0 |
| Cash & Electric Light Deposits   |      |    |    | 27   | 0  | 0 |
| "Raylo"                          |      |    |    | 1    | 8  | 9 |
| Sundry Debtors                   |      |    |    | 1150 | 4  | 6 |
| Cash                             |      |    |    |      |    |   |
| at Bank.-----                    | 268  | 13 | 7  |      |    |   |
| at Office.---                    | 5    | 0  | 5  |      |    |   |

E9485 15 3

Left: Meccano Ltd's 1910 asset list, the first known mention of Raylo.

Left: Hauptkatalog O-19 (1919) Reproduced in Baeker, C. et al 'Märklin 6 1919-1921' p138.

Top left: A complete model railway was offered, a surviving example of which is shown.

Right: 1919 Liliput set illustrated in Holley, M 'Maerklin S Gauge... well almost' in Train Collectors' Quarterly, Winter 1975, Vol. 22, No. 1, p20.



FIG. 1

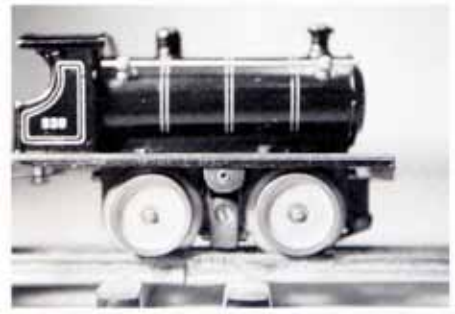


FIG. 2

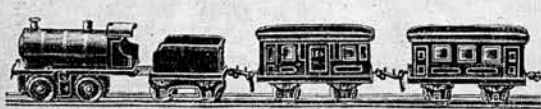
Below: Liliput c1927 reproduced in Reder, G. 'Clockwork, Steam and Electric' p192, showing a range of goods wagons.

Spur 00 = 26 mm Spurweite

**Liliputbahnen „MÄRKLIN“**

Spur 00 = 26 mm Spurweite

Extra kleines Uhrwerk. Lokomotive und Personen-Wagen 2 achsig in feiner Chromolithographie, Güterwagen in feiner Handlackierung. Gutes Uhrwerk mit Regulierung, nur vorwärtsfahrend mit Haltevorrichtung.

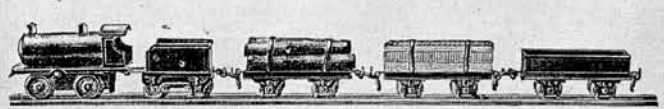


930/2

7.25

Personenzug mit 2 Wagen (1701/00 und 1702/00), Schienenoval, Zuglänge 38,5 cm

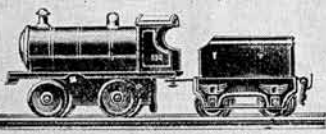
930/13/2  
Güterzug mit 2 Wagen (1713/00 und 1716/00)  
Schienenoval, Zuglänge 38,5 cm  
7.75



930/15/3

9.75

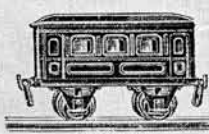
Güterzug mit 3 Wagen, Schienenachter CO, Zuglänge 47,5 cm



930

8.25

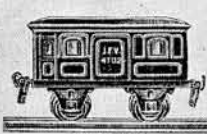
Lokomotive mit Tender, nur vorwärtsfahrend mit Abstellvorrichtung, 20 cm lang



1701/00

—80

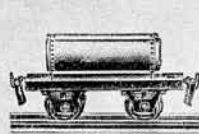
Personenwagen, rotbraun oder grün, Chromolithographie, 8,5 cm lang



1702/00

—80

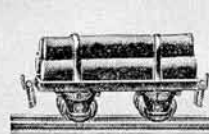
Packwagen, braun, Chromolithographie, 8,5 cm lang



1713/00

1.—

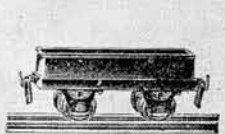
Gaswagen, grau mit 2 Gaskesseln, handlackiert 8,5 cm lang



1715/00

1.—

Stammholzwagen mit Baumstämmen beladen, handlackiert, 8,5 cm lang



1716/00

—85

Offener Güterwagen, braun handlackiert, 8,5 cm lang



conveniently half the gauge of O and considerably smaller than Liliput. Moreover, in 1924 Bing introduced an effective, tiny electric motor for its range, without protruding bearings or brushes, even. In comparison Liliput looked clumsy and ugly. Bing's system set the benchmark for the future of smaller-than-O commercial toy railway systems, and one that Meccano was to enter with great success as an observant late-comer in 1938 with Hornby-Dublo.

It is interesting to think that had it not been for Frank Hornby's unwitting input and the tooling Raylo demanded, Liliput would never have been made and, with it, Märklin's pioneering foray into small-scale electric train sets. In conclusion, while Meccano certainly spoke the last words in commercial electric smaller-than-O gauge in the inter-war years, it could be said that they might have whispered the first.

My thanks to Mark Stephens, Jeff Carpenter, Chris Graebe, Stephen Dabby, Jim Gamble, Peter Dayton and Michael Bowes for assistance with this article.



Above: from an early Meccano Ltd invoice (probably printed pre-1914, though used here in 1919) promoting Raylo.

Below: from Märklin's accounts of foreign sales, showing Meccano Ltd as buying a very small amount in 1911, then large quantities in 1912 and 1913 - mainly Meccano motors.

| Ort       | Name                  | Cond. | Anst. | 1909 | 1910 | 1911 | 1912 | 1913  | 1914 | 1915 |
|-----------|-----------------------|-------|-------|------|------|------|------|-------|------|------|
| Lissabon  | Ed. Crispos Rodrigues | 1     | 3     |      |      | 211  |      |       |      |      |
|           | Henr. Szaadon & Co    | 1     | 3     |      | 200  |      |      |       |      |      |
|           | Thomas 1 de L. Dias   |       |       |      |      | 510  |      | 620   |      |      |
| Liverpool | Carlton, Gumbert & Co | 1     | 570   |      |      | 600  | 600  |       |      |      |
|           | St. Gumbert           | 1     | 570   |      |      | 360  | 360  | 700   |      |      |
|           | Shannon Ltd           | 1     | 1     |      | 190  | 300  | 310  | 400   |      |      |
|           | Ben. Marchie          | 1     | 1     | 1200 | 710  | 860  | 320  | 310   |      |      |
|           | Meccano Ltd           | 1     | 1     |      |      |      | 76   | 13815 | 6100 |      |
|           | Thos. Son. Arthur Ltd | 1     | 10    |      | 280  | 2390 | 2060 | 1900  |      |      |
|           | Green, Green Ltd      | 1     | 1     |      | 410  | 1160 | 1235 | 7     | 470  |      |



RAYLO

Above: a rare picture of Raylo, in the 1915 Meccano 'Book of Prize Models'.

Right: the Raylo instructions.

Below: the Liliput clockwork motor, and further comparisons of the Liliput and Raylo locos, showing the skewed front axle of the latter.

# RAYLO. The Great Railroad Game

## INSTRUCTIONS: To be Read Carefully

Each player must wind up the engine himself, which is prevented from running by the small brake at the back. The engine must then be placed with the front in line with the word "Start."

The engine is started by operating the starting lever, which is the first lever to the right. This releases the brake, and at the same time the "Wreck Stop" must be depressed, also the lever controlling Siding No. 7. The next lever to be operated is the one controlling Siding No. 8, followed by Nos. 9 and 10. This completes one round of the double track, and this will be recorded on the indicator, which should be set at 0 before the commencement of the run.

At the commencement of the next and each succeeding round, the "Wreck Stop" and the No. 7 Siding Lever must be operated together.

The object of the game is to keep the engine running as long as possible.

Each complete run round the entire track represents 113 points, two runs 226 points, and so on. With care and skill the engine may be kept running round the track several times.

If the engine comes to a stop on the track, the number immediately in front of it is added to the score. If it runs into a siding, the number indicated on the sleeper in the siding must be deducted from the score. The last numbers before the sidings are: 8, 33, 56, and 85.

Only one switch lever at a time may be operated, and the player is not allowed to touch any other switch lever than the one which he is operating, on penalty of forfeiting the run.

If the engine is wrecked through not operating the "Wreck Stop," or from any other cause, the entire run is forfeited.

Any number of players may take part in the game, and the one scoring the largest number of points in five runs wins the game.

The game should be played on a level table, and the track must not be moved by any player whilst a run is in progress.

MANUFACTURED BY MECCANO LTD., LIVERPOOL.





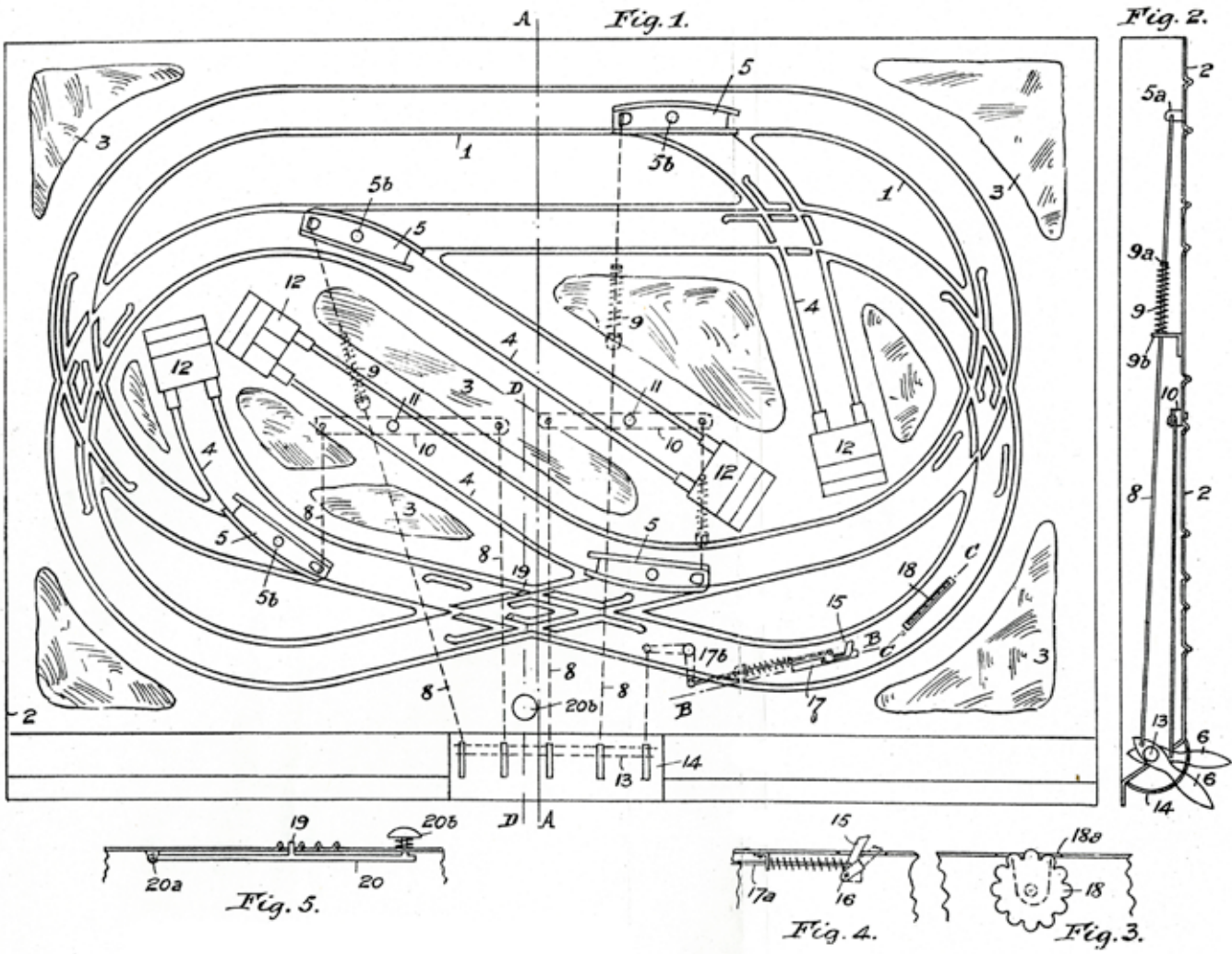
Electric Liliput set using RAYLO printings, mid 1920s.  
 Photograph courtesy of Michael Bowes



A.D. 1910. Nov. 26. No. 27,533. Gr.10/05  
 HORNBYS COMPLETE SPECIFICATION.

1 SHEET

[This Drawing is a reproduction of the Original on a reduced scale.]



Above: diagram from Hornby's Raylo patent.

Malby & Sons, Patent Liton.

