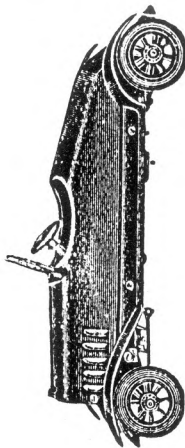


# THE "STRUCTO" Constructional Motor Cars.

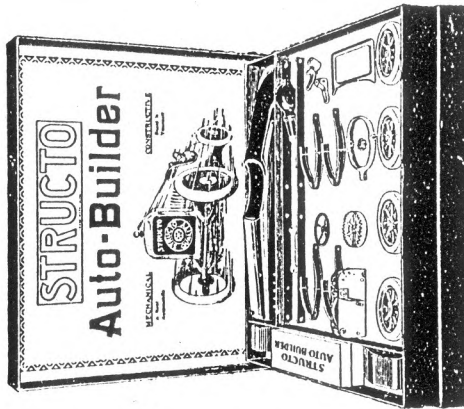
While the 'true to life' character of the "Structo" Model Cars has not been surpassed by any other make of mechanical toy, the system adopted by which the owner of the model builds it himself, gives it an additional fascination.

The "Structo" Auto Cars are miniature reproductions of the real thing. The motors are "clockwork" of exceptional power. The mechanism is arranged on the lines of the prototype, with the proper design of transmission and steering gear. Three types of cars are introduced in the series offered.



**BEARCAT MOTOR No. 10.**

A smart sturdy motor car equipped with double-unit motor, which delivers ample power to the rear wheels to drive car at high speed for a long time. Direct shaft drive; die-cast gears on rear axle. "Start" and "Stop" lever. 16 in. over all. Wheel base 12½ in. Finished in red enamel, nickel finish and black mud guard. Artillery type wheels, red hubs and spokes. This is an excellent model of a real motor car. Complete in display box as illustrated, ready to be constructed.



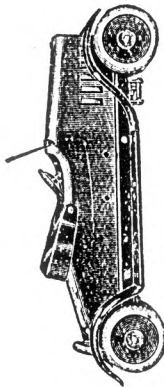
**BEARCAT MOTOR No. 10**  
In box ready to build.  
Price ... .. 40/-

These sets come from the same Bassett-Lowke catalogue as the PRIMUS Loco on p100.

# "STRUCTO" Touring Car, No. 12.

This is a model of a de-luxe Touring Car fitted with a heavy triple spring motor, cut steel gears, disc wheels, spare wheel, rounded wheel splashers, plate glass wind screen and other features of a high-class motor car. It has two speeds forward and one reverse, and proper motor car steering gear. The model is 16 in. long over all, with a wheel base of 12½ in. Boxed in parts ready for assembly.

PRICE ... .. 57/6

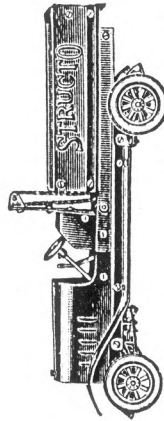


**"STRUCTO" De Luxe Construction Outfit No. 12.**

# "STRUCTO" Commercial Car, Model No. 14.

This model Lorry carries a big load and is fitted with a tipping body and swinging rear door. It has a powerful triple spring motor, operating artillery wheels with a base of 12½ in. The model measures 18 in. long over all, and is finished in red enamel with black and nickel-plated fittings. Boxed in parts as other models.

PRICE ... .. 63/-



**"STRUCTO" Construction Outfit No. 14.**  
Commercial Tipping Lorry.

**STRUCTO** This is about the standard construction sets, and not the Auto-Builder kits: the two don't seem to have had much in common. From the MCS entry, STRUCTO looks like one of the more interesting and original early U.S. 1/2" pitch systems, with a number of rather unusual parts including cast gears, pulleys, etc, but I've no first hand knowledge of the parts apart from owning examples of the Multi-Unit Girder and the Twist Beam - more of them anon. These notes have been prompted by my accumulating various references and items of paperwork that add a little to what is in MCS: perhaps others will be able to shed more light on the history of this system, and its parts and models - particularly the latter because I haven't seen the model pages of a manual.

STRUCTO was made by the Structo Manufacturing Co. of Freeport, Illinois; it appeared in 1913 and production ceased at the end of 1919 as a result of an out-of-court settlement of a legal action brought by Meccano. Gilbert bought the remaining valid patents and perhaps the idea for the 1924 ERECTOR Single-Flanged Plates came from STRUCTO.

**The SETS** Ron Michalowski kindly sent what seems to be an early brochure, with 'Second Addition' on the front cover, and the code 510-5-14 on a Leaflet that was with it. Outfits 1-6 with linking sets 1A-5A are shown, and the #6, which cost \$20, was quite a large set with 456 N&B, 290 Strips of various lengths, 24x25h & 12x11h A/Gs, and 27 Gears or Sprockets.

Later 3 'Structo Engineering Outfits' were added, called Junior Engineer, Structo Engineer, and Chief Engineer. No list of contents is available for them but, unlike the standard sets, they included the Multi-Unit Girders. The largest cost \$10, the same as a #5, and from the illustrations it seems not to have nearly as many wheels and gears, nor the electric motor which was included in Sets 4-6.

Later still a 'Cadet' outfit was added and although no prices are given, it is shown before the #1. It seems not to have included any wheels, only the 2 1/2"Ø 'Discs', but its Booklet contained 65 models, against 41 in the #1 Instruction Book.



CADET OUTFIT

At this point the linking sets were no longer listed.

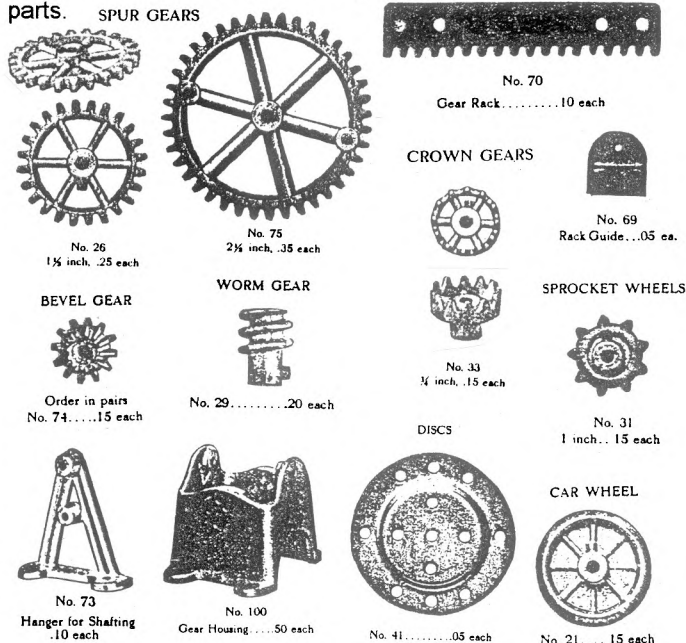
In an article in the February 1993 *Collecting Toys*, Joseph E. Freed mentioned that by 1915 sets were also being sold as 'EMPIRE BUILDERS'.

**The PARTS** They are like MECCANO unless otherwise stated. MECCANO PNs are preceded by 'M'. The parts asterisked are illustrated.

- The Strips, called Beams, (2,3,4,5,6,7,9,11,15,19,25h) have large radius ends. There are also Bent Beams (1\*5\*1 & 1\*7\*1 DAS), Corner Beams (M12a), Twist Beams (a 3h Strip with one end twisted through 90°, Brackets (M12), Hangers (M45), and two parts, the Car Wheel Bracket and Clevis, that both look rather like M12b from their blurry illustrations but perhaps the Clevis is like a M102.
- 11 & 25h A/Gs with square corners.
- Plates with rounded corners, all fully perforated: basically 4\*9, 5\*5, & 6\*11h, but also formed with one flange to give 1\*3\*9, 2\*2\*9, 1\*8\*4h; 1\*4\*5h; and 1\*5\*11, 3\*3\*11, 1\*10\*6h. Pairs of the Flanged Plates are shown bolted together to form Double Flanged Plates of different width, and also, for the 1\*3\*9, Flanged Sector Plates.
- A range of silvery coloured Pulleys, Gears and Wheels die-cast from 'white brass' with integral bosses. The Pulleys

are 1/2" (no boss), 1" & 1 1/2" Ø, and all but the 1/2" have 6 spokes.

- The Spur Gears are 1/2, 3/4, 1, 1 1/2\*, 2 1/2\*Ø, and are coarse pitched (16 DP) with 8,12,16,24,40 teeth: all but the 2 smallest have 6 spokes. To go with these is a Gear Rack\*, shown with 18 teeth and about 3 1/2" long, and a Rack Guide\* but its exact form isn't clear. Then there are two 6-spoke Crown Gears (3/4" with 12 teeth\*, & 1 5/8" with 24); a Worm\* which scales at 1" o/a, with a 1/2" long boss; and a 12t Bevel\*, about 3/4"Ø. Finally a pair of Sprockets: 1", 9t\*, and 2", 18t, 6-spoked. The Chain is said to be made of steel but looks brass coloured in a photo of some STRUCTO parts.



- The cast Wheels are a 8h Spider (Bush) Wheel, solid with a flat face; an 8-spoked Wagon Wheel which looks to be a little less than 1 1/2"Ø; and a Car (Flanged) Wheel\* of about the same size, again with 8 spokes but with webs between them, ie a disc with the spokes superimposed.

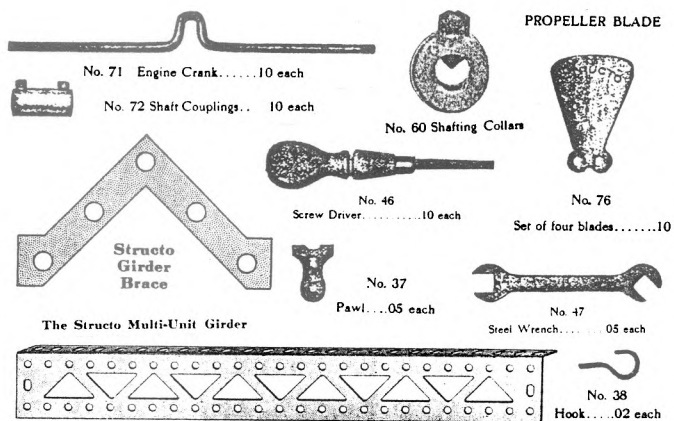
- The other circular part is a pressed 2 1/2" Disc\* with the centre deeply recessed (it can be seen in the Cadet Outfit) - the 4 holes in the centre allow the Spider Wheel to be bolted on, and the 8 outer ones give 60° & 90° spacing.

- Two other parts that look as if they are castings are a Hanger for Shafting\* (Shafting Standard), with upper and lower bearings an inch apart, and a Gear Housing\* in which a Worm shaft can be housed in any of 4 sets of bearings and thus engage with the 8, 12, 16 or 24 tooth Gears.

- Shafts (1 1/2"-11 1/2") are grooved to allow the pointed Set Screw to engage in them and this 'eliminates any possibility of slippage'. The two Crank Handles (Crank Shafts) are also thus grooved but it's not clear whether the Crankshaft\* (Engine Crank) is.

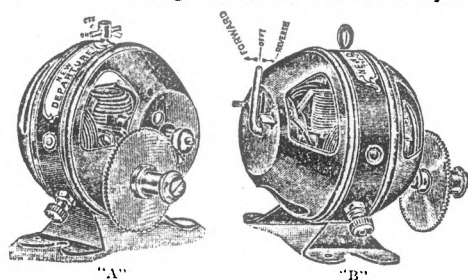
- Other parts include a Propeller Blade\* which is shown with the name STRUCTO on it; a Shaft Coupling\* with 2 tapped holes and no cross bores; a Collar\*; a Flexible Shaft Coupling which looks like a M175 but the length isn't shown - it was included in Sets 2-6; a flat Pawl\* with turned up ends at each side; a Coiled (Tension) Spring; Cord; a wire Hook\*; a double-ended flat Wrench\*; and a wooden-handled Screw Driver\*.

- There were 3 parts without PNs, the Multi-Unit Girder\*, already mentioned, the Girder Brace\*, and the Windmill Card. The latter was a windmill sail and was shown on a model in the brochure though not in the Illustrated Parts. It looks to measure about 2\*4" and has a decorative border with the name STRUCTO printed inside it.

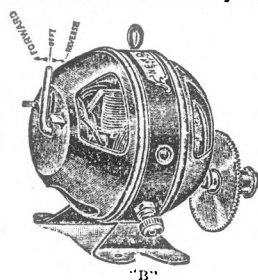


• MCS says that the parts were black and tin plated - I don't know if any of them were originally black or whether they were tinned parts that have darkened with age. My Girders have turned a dark grey. The pitch of the holes is 12.7mm, and MCS gives the holes as 4.2mm Ø, but the ones in my parts are 4.3mm in the Beam, and 4.4 in the Girders. Probably the Shafts are  $\frac{5}{32}$ ", and probably the N&B are 8-32, but both need confirming. Likewise the Set Screws, which may be 6-32, and whether bosses, and the Collar and Coupling, are single or double tapped.

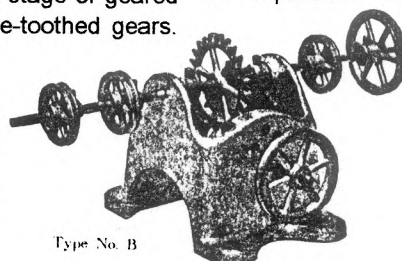
**ACCESSORIES** The early brochure shows 2 electric motors\*, Types A & B, both fitted with one stage of geared reduction using non-standard relatively fine-toothed gears.



"A"

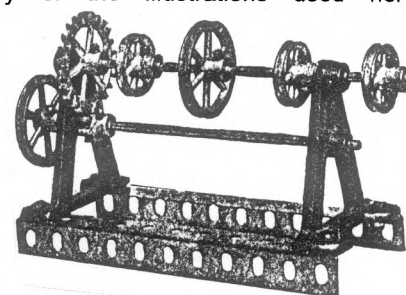


"B"

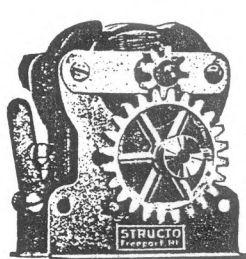


Type No. B

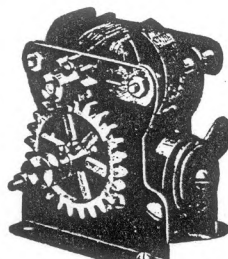
WORM SPEED REDUCER



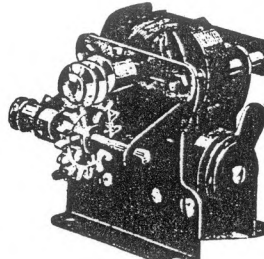
GEARED SPEED REDUCER, Type No. A



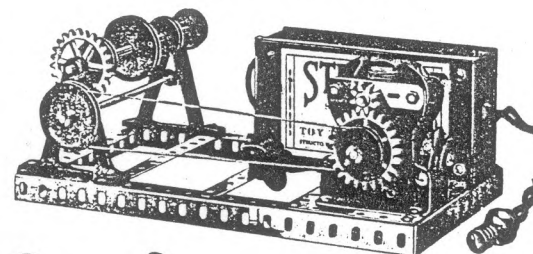
Structo Geared Electric Motor No. 1



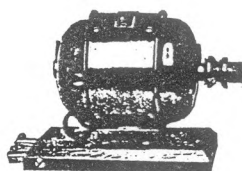
Structo Geared Electric Motor No. 2



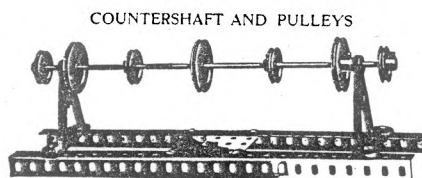
Structo Geared Electric Motor No. 3



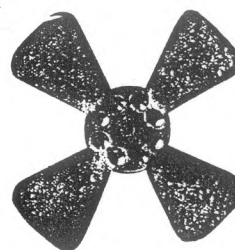
Structo Power Plant



Universal Current Motor



COUNTERSHAFT AND PULLEYS



Structo Fan or Propeller Wheel

This wheel is made up of propeller blades bolted on spider wheel, therefore may be used on armature shaft of Structo Motors for fan.  
Price complete.....25c  
Blades per set.....10c

**Two New Books** Kendrick Bisset wrote of a recently published book, *Those Sensational Sears Sets* by Klon Smith, and I've since obtained a copy. It consists of some 120 about A4 size pages, ring-bound, with full page copies of Sears, Roebuck catalogue pages from 1913 to 1962 on over half of them, and interesting explanatory comments on the facing pages. All the main changes to ERECTOR are shown, plus incidentally some ads for MECCANO, BILT-E-Z, BUILD-O, etc. The author has added helpful notes, and there's an index. The copies are from microfilm so the quality is useable but not wonderful. The book is available from the author at 315 Beech St., Liberal, KS 67901, U.S.A. for \$23.

The second is *Discovering Late Erector 1963 - 1988* by

The words on the label on top are 'New Departure'. They ran from a No.5A Transformer or 1 or 2 dry cells. Type B was reversible and was the motor in Sets 4-6. The Leaflet with the brochure advertised a bargain pack of 22 Gears, Shafts, Chain, Sprockets, etc at \$1.85, about  $\frac{2}{3}$  the normal price, and aimed at 'any boy that wants to build machinery with his steel beams'.

Later different motors\* are shown. Nos. 1, 2 & 3 were 6v and standard Gears were used. The No.2 was the one in Sets 4-6 and is said to be similar to the No.1 but with a reverse instead of an On/Off switch, reinforced bearings, and gauze brushes in tubular holders. The No.3 is like the No.2 but was 'also provided with worm speed reducer'. The Brackets for the Worm shaft were also available separately. A 100-120v Universal motor\* was listed as well, size  $3\frac{3}{4} \times 5$ " o/a with a wood base  $2\frac{1}{2} \times 4\frac{1}{2}$ ".

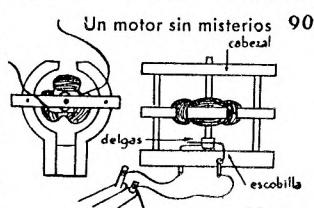
Several built-up units\* were advertised and are shown below. All are made from standard parts except the base of the Power Plant. The latter is fitted with the No.1 transformer and the No.2 motor.

**ACKNOWLEDGEMENTS** As well as Ron Michalowski, thanks are due to Kendrick Bisset, Don Redmond and Richard Symonds for material they have sent, and to the Editor of the *Southern California Newsletter* for permission to reproduce many of the illustrations used here.

Marshall McKusick. This is a comprehensive account of the last phases of ERECTOR with 230 pages, again about A4 size & ring bound, plus some fold out model plans. It's well written & well produced, with excellent illustrations and better photos than is usual for this type of publication. Based on a hasty read through there's a lot of detail on parts, sets, motors, set contents, dates, illustrations of key models, commercial history, marketing ploys, etc. Bad points - at a glance not a lot on the evolution of manuals, & no index. There's also a certain amount on what sets might be worth in 1997 but it's easy to ignore. It costs \$40 from the author at 820 Park Road, Iowa City, Iowa 52246, U.S.A. Apart from its value as a reference this book inspired me to make a model from ERECTOR parts I've had since 1973.



A fair range of experiments are shown, with permanent and electromagnets, bulbs and resistors, made up cells, and an electric motor. A No.3 Outfit is mentioned, to be ready shortly. Although certain specialised parts have to be assembled for the experiments, this isn't exactly a constructional system I think, so I won't go into more detail here. A box, from the manual cover, and one experiment are shown opposite. There's no indication of date except that it is said to be a toy of the atomic age. There's nothing on the manufacturer either - MECANO is included in the name of the small Spanish system MICRO-MECANO "GUINA" but there's nothing else to link the two.



Josep also sent a copy of the 12 page manual of another Spanish set, made by the well known firm Payá in 1962, called **CONSTRUCCIONES ELECTRONICAS**. It falls into the same broad category with electronic parts (transistors, capacitors, a coil, etc.) wired together on a chassis using special spring connectors. Details of 7 different simple morse and radio (I think) transmitters and receivers are given.

3. Ted Van Klink mentioned that there is a good, albeit slightly pricey, supplier of **TEMSI** in Toronto.

4. Sven-Ulrich Glage from Hamburg sent a list of his sets and the following names were new to me: - **DER JUNGE BAUMEISTER**; **EIFEL** (seems to be a Danish system of MECCANO or MÄRKLIN style, with the name on the Brackets); **FERMO** (German, the models are mostly built of triangular plates); **GA** (German, very simple with unusual parts); **GORDON** (most parts including Strips and Plates are brass plated, possibly an early East German system); **HERSA** (simple system, of small scale, made in Berlin immediately after WW2); **HW MAS-BAUKASTEN** (from the DDR firm that made DER JUNGE KONSTRUKTEUR); **LEICHTMETALL-KONSTRUKTIONS-BAUKASTEN** (aluminium parts similar to MÄRKLIN); **METABA** (German); **PICO ELEKTRIK** (looks like a 1970/80s version of ELEKTRO in MCS); **STUDIO ELEKTRIK**; **SV INGENØR**. He hopes to send more details in due course.

Other points: • On **AWS** (11/294), a later version of the set was sold with an updated manual containing additional models, and included in the set as new parts were 4 rubber Tyres. As far as is known none of the parts were coloured but there was an AWS clockwork motor which isn't mentioned in the manuals. • A **CONSTRUCTION JEEP** set that is different to the one in MCS and 14/373 - it is complete with a nice little tinplate Jeep, and the parts to build a Trailer and other models differ. It was made in Japan by Daiya. • An **INVENTRIX** outfit that was made in Germany in 1947/48 and has a clear resemblance to the Liverpool INVENTRIX in MCS. • A postwar **KONSTRUKTION** set which seems to be an earlier version of the system in MCS [and that in turn is thought to be earlier than the set described in 8/181]. • A **METALLO** set that seems to be pre-WW2 and Danish perhaps. It may be a 'new' system. • There was a German version of the **PHILIPS ME 1200** set described in MCS. • Two 1930s model plans for **HELLER MECHANIKUS** (15/415) are for model sailplanes made of aluminium that could really fly!

5. Photocopying tubular containers is always a problem and Kendrick Bisset has tried rolling the tube along to keep it above the moving light during copying. Rubber bands were put at either end to minimise slipping. The example he sent, of a GIRDER BILT tube, is very good indeed.

6. Don Redmond sent a note about research that he and

John Wapshott had done into the history of the Canadian **CASTLE BUILDER** system. The firm who made it, Castle Manufacturing Co. of Toronto, and its manager, Percy V. Jermyn, are listed in the city directory for 1917-18, but not before or after. A Jermyn family lived in Mimico, then a Toronto suburb, both before and after those years. The company's address was 69 Richmond St. East in 1917 and then at 80 Duchess St. As a working hypothesis Don suggests that Percy enlisted in 1914, was invalided home and founded the business in 1917, and died of Spanish influenza late in 1918 or early 1919, whereupon the business ceased. The resemblance to certain U.S. systems of the time has still to be explained.

Don also wrote that a MECCANO enthusiast of his acquaintance saw a metal construction set in a carton marked **BARUM CHEZ** (or similar) in an antique shop in Marmora (north of Kingston, Canada). It had gone when Don rang but was apparently made in Eastern Europe and had E984 on the box. Contents may have included 2x2" & 4x1½" Pulleys with Tires, 4 Rubber Tracks, Plates, N&B, and a small manual. Don wonders if it was repackaged MERKUR.

7. Dennis Snowdon mentioned that he bought a new **No.0 ERECTOR Set**, just like the one shown in 15/411, with 1" Pulleys and the FO Plate, etc, from a shop in Stanhope in 1943 or 1944. It cost 2/6, the amount he got from a local lady for digging her garden. He later swapped it for some MECCANO parts and now wishes he hadn't.

8. A friend of Tony Matthewman has pointed out that the text in the MCS pages for **RODOPI** is not Russian but may be Bulgarian. Could well be because a map shows some Rodopi mountains in the south of Bulgaria, and though I couldn't find Bratsighovo, the manufacturer's town in MCS, there are several names thereabouts that end in 'ovo'.

9. Last year Richard Bartlett found some sets called **MECHANIC** on sale in Malta, and they are probably akin to WISDOM (see 10/238), though some of the colours of the parts are different, with air force blue Strips and white (plastic) Flexible Plates. The Flanged Plates are still metallic red. 3 sets were available, and the largest included the special Cab with the motor built into the lower part, as in the WISDOM No.6 outfit. [Roger Baker has also reported sets on sale in Kuwait for the equivalent of £4 up to £15.]

Richard has also found the remains of what was probably a **SCHEFFLERS** set (see 12/324). There was no box and as would be expected the manual didn't have a name on it. However its cover, Illustrated Parts, and Set Contents agree exactly with those in MCS/FB, and the maker, VEB Metallspielwaren of 9112 Burgstädt, is the same too. Another clue is the Windmill Sail which is parallel rather than the later tapered one shown in OSN 12. The 7 sets available are shown on the back cover and though they retain the unusual SCHEFFLERS set numbering, their prices are identical with those for the Sets 1-7 in the BURGSTÄDTER manual described in OSN 12 (and included in MCS pt.5). So that would seem to put its date at near the point the name changed, although prices may not have changed as quickly in East Germany as they did in the West. The manual's PR of KE 51 76 III-8-9 690 might indicate a date of the 51st week of 1976. That at least puts it earlier than either of the 2 possible analogous dates from the BURGSTÄDTER manual.

The major parts in the set have a dark grey, nearly black finish with a sheen to it, except that the Flanged Plates are dark blue and the 5h Ø MÄRKLIN-type (metal) Pulley is a dark red.

10. To add to what was in 15/424, Kendrick Bisset sent the following notes on the **STRUCTO** parts in his #2, 2A and 3 sets. • The A/Gs have round holes in one flange and 4.7\*7.6mm slotted holes in the other. • Wagon Wheels are 1½" Ø, and have a very smooth tread, ⅜" wide. The ones in the #2 set have 6 spokes and are painted black; the others



are unpainted and have the 8 spokes shown in the manual.

- The Engine Crank is grooved, on the side opposite the crank projection.
- The Flexible Shaft Coupling is a spring a bit less than 1½" long and with an o.d. of .226". It fits tightly over the Shafts and so isn't fitted in the same way as the MECCANO #175.
- Windmill Cards are red, 1½"×1½" and have a simple line as the border with 'MADE WITH STRUCTO' inside.
- Shafts are between .160 and .164" Ø with most towards the upper value. All bosses and Collars are double tapped 6-32. The N&B are 8-32, and the Bolts have a shallow filister head.
- Some Strips have larger holes than others and there appears to be 2 standards, 4.3±.1mm and 4.4±.15mm. Possibly later parts had the second size.
- Strips, A/Gs, etc were all tin plated, and have gone grey. The cast parts are a dull to shiny grey, the colour of some of the zinc alloys used in model locomotives. N&B are shiny (nickel or chrome?) plated. [Kendrick went to some trouble in measuring the diameter of holes in a sizeable selection of parts using plug gauges and a calibrated tapered rod (a better version of the one mentioned in 4/74). He also measured the holes in some U.S. MECCANO Strips and found 4.35±.075. He sent me full details and some interesting comments, but unfortunately I haven't room for them in this Issue. His conclusion is that it seems appropriate to quote hole size to the nearest .1mm, but even with that degree of imprecision, care is needed in using hole size in identifying parts because of the tolerances and differences that can occur. (±.1mm = ±.004")]

On Threads (7/168, 8/203) he sent copies of pages from the 1914 American Machinists' Handbook. Those shown (with the initials used earlier in brackets) are Whitworth (BSW), B.A., International & French (Metric) (IFS), Löwenherz (Lhz), A.S.M.E., and American Screw Company. The International Standard for metric threads was adopted in 1898 and was effectively the then French Standard. Lhz was designed in 1894 and was said to be widely used as a fine thread in Germany for measuring instruments and similar work. A.S.M.E. stands for American Society of Mechanical Engineers and their standards were promulgated in 1907 as a series of 'standard' and 'special' sizes. With a few exceptions they correspond to the ANF & ANC sizes respectively and all the combinations of diameter and tpi used have already been given in OSN 7 & 8. The American Screw Company sizes are all within the A.S.M.E. and ANC/F series except 2-48, 5-32, 6-30, 12-20, & 14-18. The Angle of all the American threads is 60°. If anyone would like more details I can copy to them the 7 A4 pages that Kendrick sent.

Also an answer to **Query 10** (5/106) about where the name **LYONS**, used in connection with the METALCRAFT Spirit of St. Louis sets, came from. An outfit he acquired recently has a LYONS sticker pasted on the outside, and a flyer included in it (showing the range of sets) has a description of the Lyonsport Aero Club by Garvey Lyons. It is thought that his name started to be used after he became president of Metalcraft in 1928 or 1929.

On **BOOMTOWN** (15/422) Kendrick's Plates are painted a rich blue, though not as bright as the current MECCANO shade.

11. On **STRUCTO** (15/424), Richard Symonds sent a copy of a page from the 1921 No.93 Montgomery Ward catalogue; it shows a train set which includes a bridge made from what appear to be 2 STRUCTO Multi-Unit Girders and various Strips. The maker's name isn't given but perhaps Structo were using up their remaining parts in that way, after they had ceased producing constructional sets.

12. On **STABIL** Werner Sticht sent a translation of an announcement contained in a 1929 circular to German toy dealers from Walther & Co., the manufacturers. It says that for years they have produced coloured sets for export, but these have never been sold on the German market because no matter what paint, lacquer, or method of colour printing is used, damage to it always occurs when tightening the nuts and bolts. An unused coloured set looks very well, and so does the first model, but soon the appearance is spoilt by the deterioration of the parts. Without hesitation they recommend only the nickel version of their outfits. Werner asks if anyone has any information on these coloured sets or parts, which were possibly sent to markets in North or South America, or elsewhere, and may have been sold under names other than STABIL. [1929 was the year in which Märklin introduced their coloured parts - as noted in earlier Issues, STABIL metal parts remained nickel plated until the end.]

13. Late last year D.Courdoux wrote to the **METALLICO** agents in France, Italy and Holland, as listed on their boxes (see 13/336), asking about the availability of sets. Only one replied, Meridien Sarl of Dijon, saying that the constructional sets had been discontinued after a legal complaint by Meccano-France.

14. On the **MEK-STRUCT** Couplings shown in 12/310, Gordon Finch wrote that the ones he has are 13mm long, with the holes spaced 7mm apart and tapped 2mm or slightly larger.

**EXTRA MCS SHEETS** The Sheets listed here are available at 15p per Sheet plus postage. That makes £6.15 for all 41 Sheets.

MCS Amendments, List No.4 [1]  
 BILDICO [2]: X1.1 [1]  
 BOY: X1.1,7 [1]  
 CONSTRUCT: X1.1,2 [1]  
 CORUS: X1.1,2 [1]

DEN DANSKE INGENIØR: X1.1,2 [1]  
 D.V.s INGENIØR: X1.1,2 [1]  
 ERECTION: X1.1,2,4,5,5a [3]  
 HANDY CRAFT: X1.4 [1]  
 INGENIO: X1.2,5 [1]  
 JOC MECANO: X1.1,5 [1]  
 JUGA: X1.1,2 [1]  
 KOBLER: X1.1,2,3/6,4/5,4a/5a [3]  
 KONSTRUKTOR-III: X1.1,2/3/4/6 [1]  
 KONSTRUKTOR MALYUTKA: X1.1,2,3/4/6,5 [2]

KONSTRUKTOR MEKHANIK: X1.1,5 [1]  
 LEONARDO: X1.1,7 [1]  
 L'INGÉNIEUR FRANÇAIS: X1.1,2,5,7 [2]  
 LYNX: X1.1,3e/4e/5c [1]  
 MALY KONSTRUKTOR: X1.1,2 [1]  
 MAYKO: X1.1,2 [1]  
 MECCANICO: X1.1,2 [1]  
 MEKOTRAX: X1.1,2,4/6,5 [2]  
 METAFLEX: X1.1,3/4,7 [2]  
 METALOR: X1.2 [1]

MÉTALU: X1.2,5 [1]  
 MEX: X1.2a/4a/6,5 [1]  
 MINITECH: X1.2 [1]  
 OREGION: X1.1,7 [1]  
 PYGMÉE: X1.7a [1]  
 STERLING: X1.5,5a [1]  
 STRUCTEX: X1.1,2 [1]  
 TEST: X1.1,7 [1]

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**Corrections** • Jeannot Buteux has pointed out that for the second time (!) I got the name of MAYKO wrong, see MAKKO/MAYCO in 15/427. But I did get it right in 16/447. • In the 3<sup>rd</sup> para of 'A Russian Baby' (16/435), the '5\*10h Flanged Plate' should read '5\*11h Flanged Plate'. • At the top of the 2<sup>nd</sup> column of 15/420 the 'red or blue' colour of the painted ZICK-ZACK parts should read 'green or blue'.

## ITEMS FROM LETTERS

1. From Don Redmond: • John's Photo & Hobby, 2188 Danforth Ave., Toronto, Ontario, M4C 1K3, tel/fax: 416-421-1850/7441, stocks **TEMSI** sets and parts. • Parts which may be **CASTLE BUILDER** have a hole pitch of 12.77mm±. • In a large lot of **AMERICAN MODEL BUILDER** parts there were two types of N&B: the normal ones, plus 3mm thick, 3/8" square Nuts, and Bolts with 7mm Ø heads, both brass. And AMB Sprocket Chain has 13 links in 4". • The lower **STERLING** Screwdriver in 16/430 looks like the bought-in commercial item that is found with post-WW1 White sewing machines, and in other sets as well, including **AMERICAN MODEL BUILDER**. • A **BRAL 400** Set has deceptive packaging: it is in a carton 18\*14\*2" but the indentations for the parts are contained within 12 3/4\*9\*1 1/2", so 34% of the volume of the carton. [I hadn't any record of a BRAL 400 Set and Don has now sent me more details. It's a small outfit from the current 'BRES' period, but before 1994, and it's based on 4 1" Pulleys/Tyres and a 5\*11h Flanged Plate. I'll include more about it in a later Issue.]

2. From Jeannot Buteux: • From 15/413, there is also a Danish **EIFFEL** which is compatible with **MECCANO** and the parts are marked **EIFFEL**. [Could this be the **EIFFEL** mentioned in 16/458?] • The French **ASSEMBLO** patent (see 15/420) was No.720276 and was granted on 3 Dec. 1931. • **FALCO** [1] (15/426) was a **MECCANO**-type system with very colourful parts. • On **RODOPI** (see 16/458), it is confirmed that Bratsighovo is in Bulgaria.

Some new names: • **ARMA**, Czechoslovakian from 1955. • **CONSTRUCTAM**, French, perhaps from the 1950s. • **E.B.S.**, new theme sets from The Czech Republic introduced in 1996, with large, heavy, steel parts, nickel plated. • **LA CONSTRUCTION MÉTALLIQUE**, a French architectural system with 60 different Flanged

Plates as the main parts, each of which was available chromed, or painted in 10 different colours. • French **MA TOUR CONSTRUIT**, from the 1930s, with light steel parts. • French **TECHNIC**, 1939, with nickel plated steel parts but wooden Wheels.

3. In some French **TRIX** literature that Jean Estève kindly lent me the **BTB PENDULE ÉLECTRIQUE** (see 15/427) is included in a 1935 catalogue, price fr.59, and isn't among the new lines for that year, but it isn't in a list and brochure from 1938.

4. On **PREMIER** (16/457), David Fellows wrote that his brother received a set at Xmas 1955, and he remembers the Flanged Plates which were of a heavier gauge than contemporary **MECCANO**, and were finished in mid-blue semi-gloss enamel, similar to the current French colour.

5. From Keith Cameron on the **STABIL** article in OSN 14. 'Those Inventor's Outfits are extraordinarily advanced for their day, including the very early attempt to introduce heavy axles. But like so many innovations, these **STABIL** items have passed into oblivion almost unnoticed, perhaps due to failure to correct imperfections in the original design. I still think that the single metal teeth assembled in a metal strip around a hub was a brilliant idea - surely something should have come from it.'

6. From Kendrick Bisset. The **STRUCTO** Bridge (16/459) was the result of a marketing agreement between Structo, of Freeport, Illinois, and American Flyer of Chicago (before Gilbert bought the firm), which was formalized in 1922. AF advertised Structo non-constructional vehicles (trucks, autos) with AF trains, and acted as Structo's distributor. The 'constructional' Bridge is shown as an accessory in a (reproduction) 1918/19 AF catalog, and this would have been before Structo ceased producing their standard constructional outfits (see 15/424).

7. From Josep Bernal on a point about the production of **MECCANO** in Spain by Exin around 1970. Their last address (now closed) was Exin-Lines Bros. S.A., Roger de Flor 86, Barcelona 13. Later production was transferred to Mexico using the same machinery. The thread used for both the Spanish and Mexican parts was M4.

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MCS Amendments, List No.5 [1]

ANCHOR: X1.2,5a,5b [2]

ARTS ET MÉTIERS Série 3: X1.1,2,3/4/6 [2]

BERGLAND: X1.1,2/5 [1]

BURGER: X1.1,2 [1]

CONSTRUCTION JEEP [2]: X1.2/5,2a/5a,4 [2]

DITMAR: X1.1,2/5 [1]

DORANDO: X1.1 [1]

FANTASIE "R": X1.1,2 [1]

FERROX: X1.2/5 [1]

FIX: X1.1,2,4/5 [2]

FRYDAGH: X1.1,2/5 [1]

GLOBUS Der Kleine Ingenieur: X1.1,2/5 [1]

GLOBUS LEICHTBAU: X1.1,2 [1]

KONSTRUX: X1.1,2,5 [2]

MAC et NICK: X1.3/4a-3c/4d,5-a [3]

MAFELL: X1.1,5 [1]

MÄRKLIN: X1.2,3,4/6,4a/7c [2]

MECHANIC: X1.1,2,5 [2]

MECHANISKAIS KONSTRUKTORS 'SKOLENS':

X1.1,2,5,3/4,3a/4a/6-3c/4c/6b/4d [4]

METEOR (M): X1.1,2,3/6,5 [2]

MINIATUR: X1.1,2,3/4/6,5 [2]

MKA: X1.1,2/5 [1]

MÖWE: X1.1,5/7 [1]

MWK: X1.1,5 [1]

PHANTASIE: X1.2/4,5 [1]

PLASTICON: X1.2 [1]

SACHSENMEISTER: X1.1 [1]

SPEDICON: X1.1,2/3,4,5 [2]

STEEL TEC: X2.2a/5b,4a-c,5a [3]

TRIANGLE: X1.1,5 [1]

TRI-SECTOR: X1.1,7-7b [2]

TUBA: X1.7 [1]

ZICK-ZACK: X1.1,2,5 [2]

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## ITEMS FROM LETTERS

1. From Kendrick Bisset: A photo of a **JUNIOR MECHANIC** No.101 Set (see 13/361), courtesy of George Wetzel. The lid is similar to the that of the 201 described in 12/327, but the 6 models on it are different. The packaging and parts, including Strips with chamfered corners, look the same as those of the 201. The Set appears to be complete and the main parts are 2,4,6 of 16,8,4h Strips; 6 Angle Brackets; 4 Wheels; 2 & 1 of the 2h & 8h long Flanged Plates; and 1 Crank Handle. The interesting thing is that



there's a manual with the Set. It covers both the 101 & 201 sets and the cover (opposite) scales at 8 $\frac{3}{4}$ " wide. The top half is blue with white lettering; the bottom half is white with Manual of Instructions and the maker's name and address in blue.



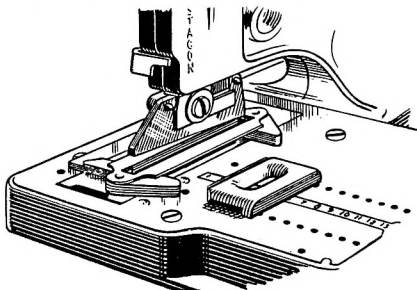
2. From David Hobson. • The **GILBERT NEW WHEEL TOY** was available in Britain well before 1921 (see 13/360): it is the subject of full page Gilbert ads in the Dec. 1919 and March 1920 Boys' Own Paper. [3 sets were mentioned, at £1.19.6, £3.7.6, & £5.5.0. The middle outfit had 'gears and pinions', and the largest 'also makes a small sleigh and racer with runners'. The model left, one of 3 shown, isn't in the manual summarised in 8/199. Both ads contained a coupon which was to be sent to Mr. A. C. Gilbert

(Dept.27), 125, High Holborn, London, W.C.1.]

• The **MANUFAX** Sets 0-4 were advertised (by B&T) before the Sept.1932 date given in 7/155. They are in an Oct.1931 BOP ad at the prices given in OSN 7. It's odd because this ad predates the Dec.1931 Supplement ad which lists only the Nos.1 & 2 outfits.

• A Nov.1956 ad from Claude Rye Ltd. (in the Children's Newspaper) probably marks the end of **JUNEERO** in the UK. It offers Sets 0, 1A & 2A at less than half price, with a further reduction for large quantities. No doubt the manufacturer's stock was being sold off. **JUNEERO** was on sale in Holland in 1962, see 14/395.

• An article in the October 1920 *The Toyshop & Fancy Goods Journal* advises that the **PRIMUS** Motor Chassis Outfit, and an Electric Motor for use with the standard sets, would be available before Xmas. **PRIMUS** vertical Steam Engines to drive models are also mentioned.



• A Guillotine attachment (left) for the **PRESTACON** Tool (9/217) was advertised in *The Toy Trader & Exporter* for July 1948, by L.Rees & Co. Ltd - a *Cyldon* Product. The claim was that it would

cut the  $\frac{1}{2}$ , 1, & 2" Strips into any length from  $\frac{3}{4}$  to 12".

• A system called **DORFAN**, or DUFAN, was in an MCS lists of possibles: nothing definite is known of a normal constructional set of that name but in *The Toy Trader* of April 1927 there's an ad for a constructional electric railway engine called the **DORFAN** Loco-BUILDER. From the illustration, the motor and gearing had to be assembled and fitted to a body made up of 2 pressed sides joined together. The name on the box is The Dorfman Co., Newark, NJ, and there's NYC 51 on the sides of the loco.

• In the July 1921 issue of *The Toyshop & Fancy Goods Journal*, a review of the range sold by the toy factor Bedington, Liddiatt & Co. included **PYFYLY** (see 14/365) as a new constructional toy.

Some of the 30 or so relevant trade marks shown in *Toys & Automata Marks & Labels* by Gwen White, are of interest, and for each a name and date (of registration presumably) are given.

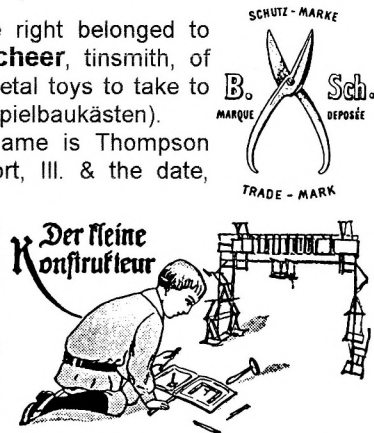
• For **BANGAROO** (see 9/235) they are Alfred James Bartlett of Gloucester, and 1908 (although a later entry shows 1922). The toy is described as 'detached pieces to join together'.

• The 1900 mark to the right belonged to **Bernhard Karl Emil Scheer**, tinsmith, of Burgstädt, and was for 'metal toys to take to pieces' (Zerlegbare Metallspielbaukästen).

• For **STRUCTO** the name is Thompson Manufacturing Co, Freeport, Ill. & the date, 1912.

• The illustration opposite is that of **DER KLEINE KONSTRUKTEUR**, by Hermann Tietz of Berlin, in 1913. No indication is given of the material used. The name was used again in the 1950s, see 12/313.

• **HAPPYNAK** (4/72 & later in MCS) is from The Matchless Metal Polish Co, Old Swan, Liverpool in 1915 - not the name in MCS but both were at Old Swan.



3. Richard Symonds sent a photo of a **CONSTRUCT-O-CRAFT** Model 100 set, which is packed in a tube with a screw top, 3 $\frac{1}{8}$ " Ø by 9 $\frac{5}{8}$ " long. The main point of interest is the 'Manufactured exclusively by Hedge Tool & Mfg. Co.' on the tube. The only address is Chicago, which is also that of the Boxar Tool & Mfg. Co., the maker given in MCS. Hedge came after Boxar because a Boxar manual, like the one the MCS material came from, is © 1946, and this tube carries © 1948 HT&MC. The photo of the boy and model shown on the tube is identical to the one on the Boxar manual. There was no manual in the tube; the few remaining parts in it are the same as those in a #500 Boxar set. Were the two companies one and the same with just a change of name? In case anyone wants a starting point, Boxar's full address in the manual is 2240 W. Ogden Ave., Chicago 12.

4. Thomas Morzinck wrote that **ebbs** metal construction sets are being made in The Czech Republic for the German company **Ebert & Schön** of Munich, and are sold only by the firm Manufactum, of Marl (near Essen). A leaflet gives a few details - the parts are said to be 50% larger than those of comparable outfits, and all metal ones are nickeled. 8 small sets are available, each making one simple model - a Windmill, Carousel, Biplane, Cross Country Car, Fire Engine, Big Wheel, Tractor & Trailer, and Timber Lorry. The latter is over 70cm long with Road Wheels that look in proportion. A larger outfit with 228 parts makes a nice looking Wind Turbine, apparently driven by clockwork. There's a blurry photo, that won't reproduce, of each model. The address given for further information is Handelskontor Ebert, Aidenbacher Strasse 108, 81379 München, phone/fax 089 788111/788118. This sounds as if it's the same as the E.B.S. mentioned in 17/491.

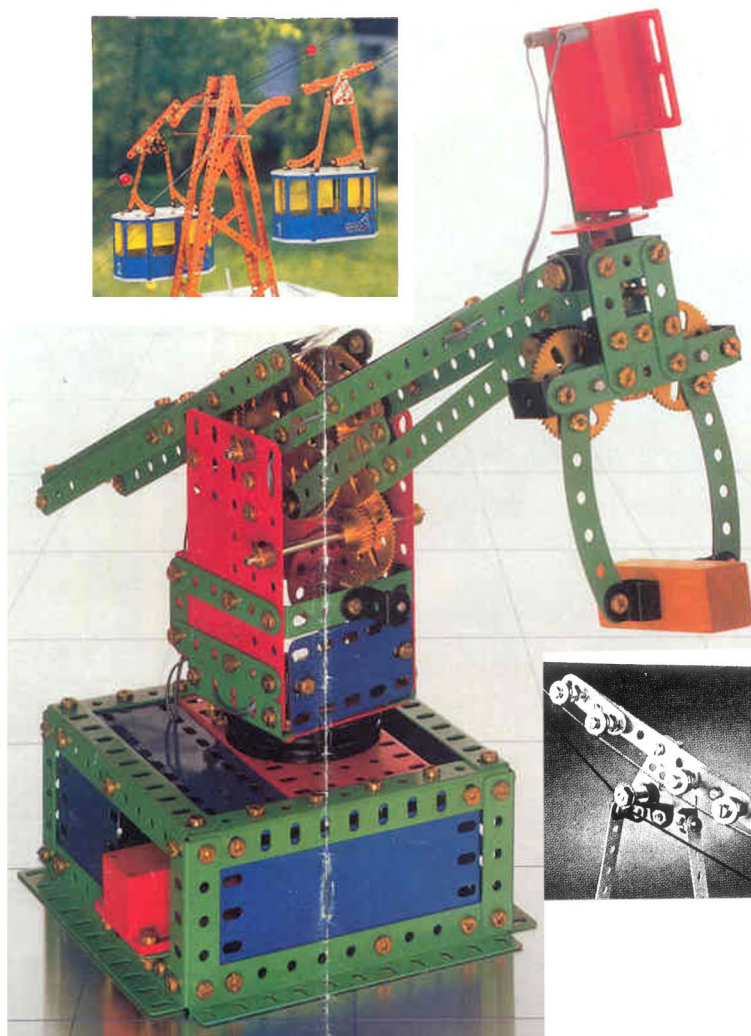
5. Roger Baker sent a photo of an unused No.3 **MAC ET NICK** set. The lid is covered by a colourful picture of a man & a boy behind a large model Submarine, with a Crane in the background. The 'blueprint' with the set (in French) looks about the same size as the one described in OSN 17 but is in portrait format, and the 10 models on it are different with a Monoplane top right and a Warship bottom left.

6. From Michael Grace: • 'On the **MÄRKLIN Robot** Set from a few years ago, I found it rather 'fiddly' to make up - some of the clearances were tight and there was a good deal of play in the various movements. Overall it was a bit



disappointing for a set that cost so much, though it does contain 4 motors (albeit 6v).'

• 'I also have the **Cable Car Set** and it makes up into a very attractive model that works quite well, and follows real practice in some respects, with steel cable, well articulated pulleys that move nicely over the saddle on the intermediate tower, etc.' [The Robot Set, #1007 was mentioned in 2/16, and the Cable Car, #1057, from the mid-1980s, in 10/266. In neither case was there an illustration but the ones below



will give an idea. The Car is made from special parts, and the body is shown blue with a white roof, and yellow tinted

windows; all the Strips and Girders are orange.

7. From Don Redmond. • The **EZY-BILT** Contrate is distinctive with a very rounded edge ( $\frac{1}{8}$ " rad.) and the teeth actually cut into the curvature. It is nickel with a brass boss.

• On **DÖCO** (15/413), it was displayed in a 1920 Canadian Centre for Architecture exhibition at Montréal, and the catalogue describes it as 'a wood and metal system; split-pin rivet assembly; includes design book; box 10.5\*37\*24.9cm; parts: bars 24.7\*0.8cm, clamps 0.8cm, discs 6.8cm; punch press 8\*34.3\*13.9cm.'

• The **STRUCTO** Worm (see 15/424) is a rather crude looking item of the same alloy (zinc?) as the Gears, and with noticeable flash and mold marks. The teeth look rather chewed but it has probably had much use.

• In a mixed lot, a yellow plastic Wheel, with a square-section rubber Tire, 1.5" o.d., marked **BILDIT**. That's a new name but was it a constructional system? The bore appears to have been drilled out to about  $\frac{3}{16}$ ".

8. From Jeannot Buteux. • The French patent for **SPEDICON** (see 17/470) is No.923760, and it was granted in 1947.

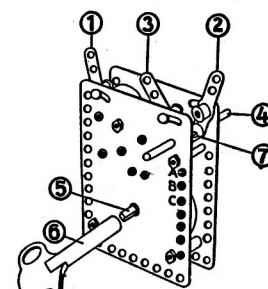
• **MAC et NICK** (17/472) was also patented, by a M.Cosneau in 1948, No.936145. [No equivalent UK patent is known.]

• Manuals in French have turned up for **STRUCTATOR** and **KLIPTIKO**.

• A **PYGMÉE** (16/448) set has been found for the first time: it's in a metal box and includes a complete manual.

9. Following the notes on the **MÄRKLIN** Chassis in 17/482, Josep Bernal sent a photocopy of a 4-page Leaflet in French (Refs: Ta 07 33 m & F. M446) showing the parts in the Nr.1105L **Motor Truck Body** Set, and how to assemble them onto the Chassis. The details of the parts have been included in an Extra MCS Sheet.

10. Thomas Keel sent a photocopy of the Instruction Leaflet, in German, for the **MIGNON C/W Motor** Nr. 250 (right), which was described in 10/262. The holes A,B,C in the side-plates allow a 12t Pinion on the output shaft, 4, to mesh with the other 3 Gears in the system, or their positions can be reversed for higher speeds.



Nr. 1 = Schnell- und Langsamgang  
Nr. 2 = Abstellhebel  
Nr. 3 = Vor- und Rückwärtsgang  
Nr. 4 = Arbeitswelle  
Nr. 5 = Aufzugschraube  
Nr. 6 = Aufzugsschlüssel  
Nr. 7 = Arbeitswellenrad mit Gewindestift.

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MCS Amendments, List No.6 [1]

AKRON: X1.1,2/6,5,5a [2]

ENGINEERO: X1.2,4,5,6 [2]

E.Z.: X1.1,2,4,5 [2]

FAC: X1.1, [1]

FAC [a]: X1.3/4,3a/4a,5 [2]

FAC [b]: X1.6,6a [1]

FAC [c]: X1.2,3,4-4l,5-5b,5c/6,6a,6b [9]

INSTRUCTO: X1.1,2,4,5 [2]

KONSTUKTOR [10]: X1.1,2,4,5 [2]

KONSTUKTOR-MEKHANIKA [2]: X1.1,4/6,4a/6a/7,5 [2]

KONSTUKTOR SHKOL'NIK: X1.1,2,4/6,4a/6a,5 [3]

MAKUMAL: X1.1,5 [1]

MÄRKLIN: X2.3a/4b,5 [1]

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## ITEMS FROM LETTERS

1. From Richard Symonds. • An ad for a 6" dial calliper gauge that he bought recently for \$19. Made in China, but well made, he recommends such an instrument as being ideal for OS/handyman purposes.

• A photo of a **LYNNCRAFT** Set that's similar but not identical to the one described in 12/309. The outside of the lid looks identical, though I can't quite read if the Model No. is '146'. It's probably an earlier Set because there are no Tyres in it; otherwise the contents look the same, with a generally similar layout, except that all 5 Pulleys are between the Trunnions, there are 2 extra Pulleys (with hidden, or no, bosses), each holding down 3 of the Triangular Plates, no Span'drivers are visible, and in dark areas of the photo on either side of the Large Flanged Plate, there looks to be an extra Bush Wheel on the left, and another part, perhaps a Pulley or a third Bush Wheel on the right. There's no centre hole in any of the Strips.

2. From Don Redmond. • On the **ERECTOR No.100 Set** (from 11/298 & 15/ 411), the bore of the Wheel is just over 3.25mm, & the Axle is 2.90mm Ø. See *Greenberg* 2, p139, for a photo of the Set; it's said there that it was marketed only in 1957, & that the parts were shrink wrapped onto a yellow backing board.

• **JE-IL/JEP** (see 13/344) were still going strong last summer. Their address is Jeil Science Material Enterprises, Kuroku, Kurodong 546-2, Seoul (Buyoung Building, 3<sup>rd</sup> floor), and the phone numbers are the 858 ones in OSN 13. The firm does not market its products outside South Korea. The sets 1-3 and 5 & 6 continue but there's doubt about the Army outfit (see 6/111). The current manuals are for Sets 1; 2 including 1; 3 including 1 & 2; 5; & 6). The #3 is the same as the one described in OSN 13 with very minor changes to the text, and the models in #5 & 6 are probably the same.

• On **TEMSI** hole spacing, see 9/225, Charles Shrubsole has found that the it is erratic rather than being uniformly a little over ½". Don checked four 25h Strips from one set for himself and found some pairs of holes at exactly ½" while others were up to 1.5mm out. But the erratic spacing was identical between all the Strips, and the end holes were all 3mm over 12" apart. [The 6 in a set from the 1950s or 1960s are all no more than 1½mm out over the 25 holes and the holes seem to be very nearly uniformly spaced; the 4 A/Gs in the set are very similar.]

• **STRUCTOMODE** A/Gs are black, like **MÄRKLIN** used to be, but are easy to recognise because they are copper plated under the chemical blackening.

• The **MASTER BUILDER** Motor shown in 18/495 looks just like the 1914 **ERECTOR** P-51 Motor on p52 of *Greenberg* 1. It was only listed for the one year, and was fitted with strip brushes. Are they identical? And who made them? In 1915 Gilbert changed to the P-58 which had carbon brushes, slightly different frames with 4 terminals, & bracket feet. Said feet had a round hole in each, later slotted right out to the edge of the foot.

• The word in the **KONSTRUKTOR [10]** 'flying goose' logo (18/498) is Moskva (Moscow) in script.

• **Buffing** dull dark grey (tin plated) **STRUCTO** parts using a cloth buffing wheel impregnated with tripoli (rottenstone) gave a bright, smooth shine. Tin oxide is tough.

• Some 5h Strips with very large end radii, of about 2", cut close to the end holes, have been identified, thanks to Kendrick Bisset, as **MASTER BUILDER**. [As far as I know most M B Strips have well rounded ends, see 16/450.]

• **MESO** in the **SONNEBERGER** logo (see 18/502), no doubt comes (in similar fashion to other German abbreviations) from **MEtallwarenfabrik SOnneberg**.

3. From David Hobson. • An unused **MECANIKIT No.0**, still strung in its box, is exactly the same as the one described in 10/250, and MCS, except that all the Strips bar 3x 3h are aluminium, and there are 12 N&B. 8 of the Nuts

are square and 4 hexagonal, both the same across flats. The Axle is aluminium, and the Balloon Wheels have a gold sheen, and appear to have been lacquered. No Screwdriver was found in the Set.

• From the Nov. 1930 *The Toy Trader*. **Sonneberg** (see 18/502) has been known for toys for the last 200 years and has 'the unique **German Toy Museum**'.

• Something on the history of **VOGUE** (ref. 17/464) appeared in the Sept. 1951 *The Toy Trader & Exporter*. The Vogue Manufacturing Co. of Egerton Road, Melton Mowbray was established some 40 years before and produced metal trimmings for shoes. It was bought by A.N.Pallett in 1947 and new machinery for making toys and fancy goods was gradually installed, including plastic moulding equipment. A subsidiary, Vogue Playthings Ltd. was formed in 1947 to market the toys, and in 1949 Thermold Ltd., who made toilet goods and advertising novelties, was acquired. During 1948/49 the original factory was enlarged and another factory at Oakham, 10 miles away, was taken to make the constructional sets. In 1950 A.E.Pallett, father of A.N., and managing director of Casceloid Ltd. from 1919 to 1943, joined the firm and became responsible for admin and sales. In that year additional premises were obtained in Melton for packing and dispatch, and the original factory was modernised. The **VOGUE** pressings were then made there and taken to Oakham for finishing and packing. A blurry photo in an earlier (Feb. 1951) issue showed 3 sets which look like those shown in the Manuals, and behind them is a largish model that might be a Big Wheel.

• An ad from the manufacturers' agent Val Green, in the Jan. 1952 *The Toy Trader & Exporter*, mentions 'The latest & greatest' **KONSTRUKTA** Steel Constructional Sets'. The parts in this system, and their similarity to **BEAVER**, were discussed in 6/129, & this is the first definite date for either. Incidentally **BEAVER** was made by a firm, Rutland Plastics Ltd., in Oakham, where **VOGUE** sets were produced.

• **DAN DARE** Sets 1 & 2 (see 14/366) were announced in an ad by Bartram, the manufacturer, in *The Toy Trader & Exporter* for July 1953, and a similar ad with illustrations of the Sets appeared in the August issue.

• An article on **CONSTRUMENTS** in the Dec. 1932 *Toy Trader* says that the sets have only been on the market for a week or two. So that confirms the date inferred in 5/79. The 20, Plus, & 100 Sets are mentioned and the 20 is said allow instruments worth £20 to be made, or at least £100 for the No.100 Outfit. It is also stated that the interchangeable metal parts were made by The British Thomson Houston Co. Ltd.

• The 1937 **JUNEERO** box lid illustrated in 9/216 was also shown in *The Toy Trader* for Feb 1936, in an ad for cartons, and in a later 1936 Waddy ad.

• **ARKIRECTO** (2/19) was patented in 1933. Mentioned was made of it in the Feb 1934 *Games & Toys*, and in March an ad from the manufacturers, Arkirecto Ltd., Carlton House, Regent Street, London, S.W.1, offered sets from 2/6 to £2-2-0. In October the price range was 2/6 to 52/6 and ads continued until Feb 1935. The next ad, with the same prices, was in June from Waddy Productions, Astor House, Aldwych, London, and they had another ad in September. Finally in June, July & August 1936, E.M.Napier Ltd., Exmouth House, 3 Pine Street, Farringdon Road, London announced 'We have procured the entire stock of **ARKIRECTO** and can offer complete outfits or parts at greatly reduced prices'. (From a Nov 1937 Napier ad: 'Turn that dead stock into £-s-d - London's Largest Job Stock Buyer - pays spot cash for surplus stock.')

• The **MEX** No.2 Set (see 16/452) was advertised by W.H.Cornelius in the Nov 1933 *The Toy Trader*, price 1/-. So unless it had a very short life it's strange that it wasn't mentioned in the later *Games & Toys* ads.

• In 18/523 Don Redmond asked about a yellow plastic Wheel with Tyre marked **BILDIT**. It probably came from the simple plastic **BILDIT** system which was based on a special

**Corrections** • On the lid of the MORECRAFT No.4 Set (19/537) the MORECRAFT/POWER/Equipped group of words are at bottom right, not bottom left as stated. Thanks to Don Redmond for pointing this out. • On KON. SHKOL'NIK in 18/501, '7 & 11h Strips' in the 4<sup>th</sup> line of the 5<sup>th</sup> para should read '7 & 9h Strips'.

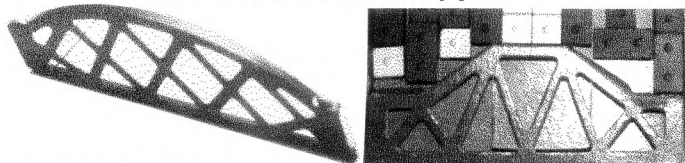
## ITEMS FROM LETTERS

1. From Thomas Morzinck. • A photo from Tobias Mey of the lid of a No.1 **Kosmos MASCHINEN** Outfit. It's in full colour and shows a boy using a real bench drill that is of a similar type to the model shown in 20/586. The drill is blue and a couple of parts alongside the box look blue too. The wording along the bottom of the lid is: KOSMOS-BAUKASTEN MASCHINENBAU. Also in the photo is the manual, in portrait format, cream with the same picture as on the lid, but quite small and in black.

2. From Don Redmond. • Some details of the **MODERN-MORECRAFT No.4** box described in 19/537. The box is 2¾" deep with both the top (lid) and bottom based on a wooden frame 13⅞"×11×1⅞". [The lid sits on top of the bottom, located by an inner liner, and this gives a clear space above the inner tray, where a Motor could have sat, of 2¼" at most.] On the bottom of the box is \$4.89 in pencil.

• On the **ELETTRO BRAL** Ruhmkorff Apparatus (19/532), Heinrich Daniel Ruhmkorff (correct spelling) 1803-77, invented the induction coil in 1855, and it was called by his name, the Ruhmkorff Coil, in the 19<sup>th</sup> century.

• A letter from Kendrick Bisset in the July 1997 issue of the *S. Cal. Club Newsletter* compares the Richter metal Arch Bridge Parts with those produced by Gilbert for use with **MECCANO-BRIK**. (He had bought the toy division of the US branch of Richter's company in 1919.) The Arches are supported by the same type of U-Strip but their bracing is simplified with no vertical members. (But in ads & manuals the Richter pattern is shown.) In size they are the same height, 2", but the Gilbert parts are 6" long against 6.12", and 2.21" wide against 2.35". The Richter parts are painted a dark blue-grey and the Gilbert ones red. [See also the notes on the Richter parts in 19/555. The Arches and Roadway in a #000 MECCANO-BRIK Set are made of orange cardboard and the Arch is humped with diagonal bracing. In the photo below right, the metal U-Strip may be visible behind the card humped Arch, and on the left an oblique view of the Gilbert metal variety.]



• On **STRUCTO** (see 15/424) one Spider (Bush) Wheel has a flat front face and another has a boss on it protruding ⅛". The groove on the Crank Handle to hand is 'barely a scratch'. The pitch of the Sprocket Chain is about 8mm, perhaps 3 links to the inch.

• On **bolt heads** (20/585), 'Allen' is the name of the hexagonal socket in the head, not the head itself. There are other sockets of course, the PHILLIPS cross type for example, and square Robertson sockets which were patented in, and are unique to Canada.

• On the **POW'R HOUSE Ferris Wheel** (20/587), the radial Arms are indeed a rounded channel section, with 2 long tabs at one end which are bent out at right angles to attach to the Rim Segments where they join each other. The Rims have a channel or groove at one side, evidently for a drive belt. Also the hole for the Axle in the Side Supports is at least ¼" Ø and so presumably the Hub and Axle correspond. [The Axle can be seen more clearly in the original of the illustration in OSN 20 & could well be ¼" Ø.]

3. From Werner Sticht. • On the yellow parts in Germany, see 20/571, some of the **original MÄRKLIN parts** were

yellow. Pl.18 in *Bauklötze Staunen* shows a 1935 outfit and the 25mm Pulleys, Bush Wheel, and 38mm Flanged & Grooved Pulleys are yellow. In the late 1930s such parts were made of aluminium due to material shortages and were unpainted. A set with such parts can be seen in *Eisenzeit*, Pl.36.

• On the **Lilienthal patent** (20/571), although it was in the name of Otto Lilienthal, the aviation pioneer, in reality his brother Gustav was the inventor of the system. Otto's name was used because Gustav, who had also invented ANKER blocks, had lost all his money in November 1987 as the result of a lawsuit with Richter.

• Of one 'imitator', Hornby, in his Life Story (see 20/571), wrote, 'One of the earliest of these systems consisted essentially of bars of wood perforated at regular intervals with holes, and capable of being fastened together in various positions by metal pins passed through these holes. By means of this system it was possible to build a variety of houses and other fixed structures, but it was impossible to construct engineering models or mechanisms that worked. No matter how the parts were joined to one another, the result in every case was a fixed position - there was no means of producing movement. The opening words of the patent specification of this system read:- "The subject of the invention is a toy building set, by means of which structures can be put up closely resembling real structures put up by carpenters . . . ." This phrase places it beyond all possible doubt that the object of this system was to produce fixed structures based on the principles of carpentering. Meccano, on the other hand, is designed to produce working structures built on the principles of engineering.'

The patent referred to is 153854 of 1903 by Walter Walther (see 13/348) and the opening phrase quoted is a direct translation of the original German. It is now known for sure that Walter was the son of Franz, the originator of STABIL. Hornby's application for a German patent to cover his 1901 invention was not successful. [I understand that the papers that might have explained why were destroyed long ago, but I hope to include more on early patents in the next Issue. Why did Hornby give so much space to Walter's patented system? And was it ever produced?]

4. From Jeannot Buteux/Constructorama. • Some details of a **YUNYI [YOUNI] KONSTRUKTOR** set like the one described in 20/567, but from 1994. The nickel plating in it is very bright but flakes off in the fingers. The abbreviation 'F-ka' stands for Fabrika (фабрика), meaning factory.

• **OS names** not yet mentioned in OSN: ARMA (Czech, 1960, green Wheels); BOB (German); CONSTRUCTO (Belgian, c1948); IDÉAL MÉCANIQUE; KÖSTER (from 1951, a theme set to make trains in various colours); LA CONSTRUCTION MÉTALLIQUE; M.C.D. (Dutch); MECCAMINI; MULTI-MAKE (French, from c1910); LES NACELLES VOLANTES (French); N.S.V. (Dutch); TECNOR (French)

• On the date of **HOHA** (18/517), a set is known from 1950.

• In a known **KONSTRUKTOR-MEKHANIK** set like the one in 18/566, the Axles are 4.0mm Ø and the Bolts are 6,8,10 & 15mm u/h. [See also 20/566].

• **MECHANICUS** (see 18/518) was sold in Holland under the name MECHANIKUS STAALKNUTSELDOOS (an original brochure is known).

• The Patent described in 18/521 does indeed correspond to **FANTASIE 'R'**. Fig.10 on p11 of the Manual is identical to Fig.5 of the Patent, and one manual models is marked G.F.N. 1932. (G.F.N. = Gebr. Fleischmann / Nürnberg)

• On **GEOBRA** (19/522), there is also a larger outfit to make a Crane of the same type but bigger. Such a set is known from 1970.

• At the time of writing an **OS Exhibition** is being held at Euro Tecnica (at the Old Customs House, Hergersberg) near the Belgian/German border (Bullange/Losheim). On view, over 70 different systems which belonged to the late Dr Griebel, with sets and many models. The exhibition may have closed by the time you read this, so phone beforehand



**CONSTRUCTION JEEP, TRUCK, etc.** Some sets have been seen on Ebay and I've been looking through everything I have to see what's what.

First **CONSTRUCTION JEEP**. The parts described in 14/373, and shown in MCS under JEEP [1], were said to have been in a box 8\*4½", and I assumed at the time that the set did not contain a Jeep. But I now have a photo of an outfit with a Jeep in it, in the same size box, with the same label on the lid, and with the parts laid out as in MCS. So it may well be that there was never an outfit without the Jeep. And that would make sense of the Set's title.

The box is grey, yellow inside, and the parts are on the folding panels like the set in 17/469. The label, below, with scribble at the top, has the Jeep & Crane Trailer in colour on a yellow ground, the Marusan & KK logos as in OSN 14, and also the 'No.3377'. The Jeep is dark blue and looks like the DAIYA one in OSN 17 (JEEP [2] in MCS) except that the seats are light brown with no patterning.



**CONSTRUCTION TRUCK** A photo of a set with the parts as in OSN 14, and the Truck itself, is now known. Apart from the colours it is basically the same as the one mentioned in 19/537. The fold-down cardboard box is 7" long by 2½" wide, brown on the outside and yellow within. The lid label below is yellow & white with the name



MINIATURE CONSTRUCTION SET TRUCK TRAILER on it, and the KK & DAIYA logos. Some parts are on the left; the Truck on the right is light green with a bright radiator grille, and has the red Flanged Plate on the back. Pivoted arms carry the red bucket at the front. These fitments are correctly coloured



but the actual Truck (left) is light blue, and has just an impressed oblong instead of a grille. As on the lid the bumpers are painted in black and yellow stripes. The Spanner is black & the Screwdriver nickel. The Model Leaflet is as in

MCS with only the name CONSTRUCTION TRUCK on it.

Another 'TRUCK' set is now known, similar but by a different maker. The box is dark on the outside, perhaps green, and the label is the same as the one above except that above 'TRUCK TRAILER' is ERECTOR CAR KIT, and along the bottom is MADE IN JAPAN SHARE A JOY WITH AHI TOYS No.???, followed by AHI in a box with something

**AHI**

unreadable under it (left). None of the parts can be seen except the Truck, which is as above though it looks light green rather than light blue, and, just as above, the Flanged Plate on its back. The top of the Model Sheet is visible and is unchanged.

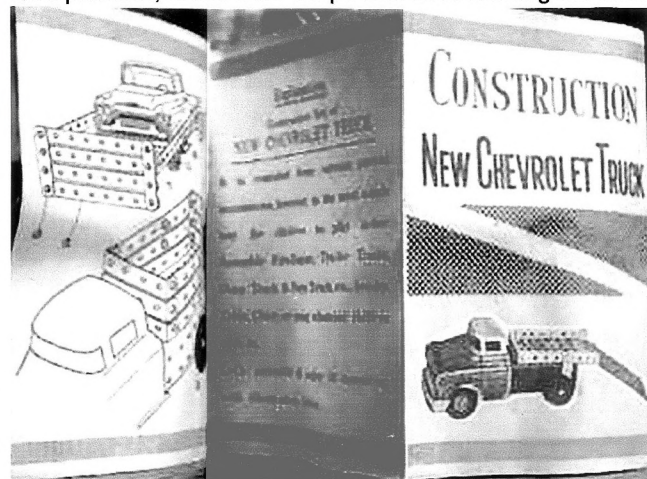
**CHEVROLET TRUCK CONSTRUCTION SET** This is

a hitherto unknown set by Daiya. The outside of the fold-down box can't be seen but the inside is yellow. The lid label is probably the same as the one (below) that is on the inside of the lid (most of the folding boxes have similar labels on both sides of their lids). The label is yellow & white (the dark area is shadow), and the model looks like a pick-up truck. The front part is red with a bright grille and light green top to the cab. The rear sides are dark blue with a row of 5 holes along the top & bottom of each. On top is what might be a ladder, in light green.



The parts that can be seen in the photo are 3, 4, & 8h Strips; 8x 1\*4\*1h DAS; 2h Strips or more likely A/Bs; & some other Brackets, probably 2\*1h A/Bs, Reversed A/Bs, & a Double Bracket. All these look green in the photo. Then there are 2 black Road Wheels; 2 red Triangular Plates; a black Spanner; and, both bright, an Axle with threaded ends & a Screwdriver. All these are similar to parts in the other sets. Finally the Truck itself, as on the lid but with no back wheels, and, of course, no ladder. So it seems that the Truck had to be completed using the separate Wheels & Axle.

On the front of the Model Leaflet (below) are the words CONSTRUCTION New Chevrolet Truck, and a photo of the Truck fitted with a load platform & ramp, both of which are probably made of Strips. The 2 sketches on the left are of one model fitted with a bulldozer blade made of 4 horizontal 8h Strips, & another with a high-sided, 8h long load platform, made from Strips with DAS forming the ends.



## SMALL ADS

**For Sale.** MCS. A few copies are still available. Parts 1-4 are £21 each, Part 5 is £20, all plus postage. Please contact Jean Beadle, 33 Yoredale Avenue, Darlington, Co. Durham, DL8 9AN; Tel. 01325 356097.

**QUERY 28** What is the shape of the groove in STRUCTO Rods? – square bottomed like the first MME Rods & the MECCANO Rod with Keyway, 'V' shaped, or some other? Dimensions, even approximate, if possible please. Incidentally the dimensions of the MME & MECCANO sections were given on p948 of MJ 32.



(see 17/464). The photos of sets 1-3 are essentially the same as those in MCS; the No.5 has 3 layers of parts, two of which look as if they may be like those in the No.3. Also listed are the previously unrecorded linking sets 1A & 2A, and the Catalogue Nos. for all these sets are 1, 1A, 2, 2A, 3, & 5.

The Catalogue No.4 is the **METALCRAFT** set (see 14/393), and No.6 is the **PIONEER** set (17/466). So these two sets were definitely from the VOGUE stable, and they were on general sale, and not, at least at that point, special sets created for a particular customer. Also though very similar to one another, they existed at the same time. From the Cat. Nos., METALCRAFT may have come first. As might be expected the wholesale prices of the two sets were very similar, 96/- per dozen for METALCRAFT, & 100/- for PIONEER. Thus they fell between the No.1 set at 64/6 & the No.2 at 136/-. Nos. 3 & 5 were 185/- & 257/-.

The Supplementary Spare Parts Sets 1-5 mentioned in OSN 17 are listed; their contents are given and are as in MCS.

The maker is given on the Catalogue as Cascelloid, Abbey Lane, Leicester, Division of The British Xylonite Company Limited. Their offices & showrooms were at 9 Conduit Street, Mayfair, London, W1, and 7 Pall Mall, Manchester 2.

**METALCRAFT [2]: S1; PIONEER: S1; VOGUE: S1** [28/814]

9. From Clive Weston, details of a **PRIMUS Set B**, apparently unused, the first ever reported sighting (see 24/712). It is in a blue box, 9 $\frac{3}{4}$ "x7 $\frac{1}{4}$ "x $\frac{3}{4}$ ", with the label below. The contents are: 6,4,2 of 5,6,11h Strips; 2 each of 6\*6h Plates, Architraves, 1 $\frac{5}{8}$ " Wire Stays, & Wood Slips; 5x 1" Loose Pulleys; a 3 $\frac{1}{2}$ " Axle with Tapped Ends (#167); 12 A/Bs; 17 N&B. No sign of a Tool of any sort.



Most of the parts are held in slits in a red backing card, but the A/Bs & N&B are within triangular partitions in two of the box's corners.

The model leaflet is the one described in OSN 24. Some of the 'B' models in it would need parts not in the Set: a Fast Pulley or Axle Stops to locate a Loose one; a Crank Handle; and longer Bolts for the Loose Pulleys, if they were to run freely.

With the Set was a leaflet listing the full range of PRIMUS sets. The 'C' outfit is illustrated and its packaging is in the same style as that of the 'B'. The extra 'C' parts appear to be in line with the details given in OSN 24 except that the Set has 4 Fast 1" Pulleys & one Loose one. A Screwdriver, a Crank Handle, & 2 Axles can also be seen.

The Leaflet is undated but from David Hobson's *PRIMUS* book (see 20/583) it seems likely to be from 1923 or 1924, and the 'A' set, price 1/6, may have been the unidentified outfit from 1923 mentioned on p25.

**PRIMUS ENGINEERING: S1** [28/814]

10. From Don Redmond. **STABIL** Flanged Pulleys have two different styles of boss (both on the inside of course). One is the usual stubby cylindrical type with very small peening; the other is thin, with a rounded edge to the free end, and held in position in the disc by a crimped-on wire ring.

**STABIL: S1** [28/814]

11. On **ERECTOR** Bolts, Don Redmond mentioned 3 types: 1) Gilbert MECCANO, with what he calls a 'button' head, 5.8 to 6.1mm Ø, the edge almost rounded in at the margin (like antique shoe buttons). 2) Duplex standard or large headed, 7.5 to 7.8mm Ø, 3mm deep. The large head, needed because of the 1/4" holes in the Duplex parts, is prominently round. 3) Medium headed, 6 to 6.9mm Ø, under 3mm deep, with a rather wide slot, apparently forged rather than sawcut as the sides of the slot may slope.

**ERECTOR: S1** [28/814]

**QUERIES** [28/814]

**Query 28** from 27/803. Some **STRUCTO** parts are now to hand and the groove in the Axles is vee shaped, with the apex angle rather greater than 90°. The depth is hard to measure accurately and varies a little from part to part but is probably between .5 & .7mm. The Crank Handle & Crankshaft are also grooved.

**Query 29** What colour (or colours) is **STABIL** Cord?

**MYSTERY PARTS** [28/814]

**No.51** from Don Redmond. A 19h A/G, with a 15mm slotted arm, the other 12 $\frac{1}{2}$ mm, & the hole pitch is 12.7mm. The metal is only .55mm thick and it has a very marked curve, perhaps 2mm radius, at the bend., It is painted, rather badly, bright green.

**No.52** More from Don. Parts similar to **JUNIOR MECHANIC** (see 12/327) but both sides of the Wheels are nicely enamelled red, and both sides of the Flanged Plates are also painted. The ends of the Strips & A/Bs are rounded.

**SMALL ADS** [28/814]

**For Sale.** Large collections of **TRIX & FISCHER TECHNIC**. Details from Ivor Ellard, 44 Well Lane, Galleywood, Chelmsford, Essex, CM2 8QZ; phone 01245 269830; email ellard@nildram.co.uk.

**Wanted.** Any metal nut & bolted together **constructional car or other vehicle kits**, or any parts identified or not, ie wheels, axles, chassis, steering gear, mudguards, wings, clockwork motors, etc. Anything & everything in any condition considered. Also boxes, instruction manuals (copies if you don't want to part with originals), or any information at all.

Please call Gary on 01635 200460 before 8pm or email me at gary2car@aol.com.

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you wish to receive the next Issue.

**Some Notes on the History of STRUCTO** An article on STRUCTO appeared in 15/424, with later shorter items in 16/458, 21/618, & 28/814. Now more material is to hand, including most of 2 sets, various manuals & items of literature, and some Ebay photos. My thanks to Kendrick Bisset, Orion DreamDancer, & David Hobson for much of the new material.

What follows is an account of all this arranged in what seems to be chronological order, plus some details of the parts. Many of the items used, particularly the manuals, are not dated and their order has largely been determined from the various products listed or advertised in them. Nevertheless, as will become evident, some supposition has been needed in deciding where to position certain of them. Details of the manuals referred to are given at the end of this piece.

**1913** STRUCTO first appeared in 1913 and a **May 1913 Structo ad** from the *American Toys and Novelties* periodical says that 'Pulleys, Gears, Chain Wheels, etc are strong, smooth, non-corrosive Die Castings', and that 'Beams, Girders, and all other parts are made from best quality of Cold Rolled Steel, heavily Nickel Plated'. The grooved Shafts are also mentioned. The reference to nickel plating was repeated in a **June 1913 ad** and is of interest because although most parts found are tinned (usually now turned to dark grey), those in an early set found recently are nickel. No mention is made of nickel parts in the 1914 material described later so the 'nickel' set is likely to be from 1913 or early 1914. It is a No.2 and apart from the plating, and with some minor exceptions, the parts are identical to later ones. There was no manual with the Set but a few weeks later the Ebay seller offered one which may well have been from it. It is one of 3 manuals known in which the models are shown as photos rather than the line drawings used later. Excluding covers the first has 32 pages, the second 40, and the third probably 60 (the covers, pp1-12 & 53 onwards are missing). Their exact dates are uncertain but it will be assumed that the 32pp was from 1913, the 40pp from early 1914, and, judging from the parts used in the models, the 60pp from late 1914 or early 1915.

**The '32pp Photo' Manual** The cover is shown below. The



**sets** listed in it are Nos.1-6 & 1A-5A, priced at \$1,2,3½,5,10,20 and \$1,1½,1½,5,10. They are significantly smaller outfits than those in later manuals (& in MCS), and the Set Contents are given on the next page. Sets 1-6 are illustrated in the manual: 1-3 have a single layer, 4 & 5 have a lift out tray with all the Wheels on it, and the 6, in a wooden box, has 2 such trays in its second layer. The No.2 lid is shown at the top of the next column, the No.3 is similar, and so probably are the 4 & 5. The lid of the wooden box for the No.6 isn't shown but a slightly later 5A is probably similar. It is dark polished wood with the name, below, in gold, about 7" long. The No.1 lid is much



plainer than those of Sets 2-5 and in B&W it looks generally similar to the 3A shown below the No.2 in the next column, except that there are no models on it. The models on the 'A' set lids vary from set to set and there are none on some outfits - probably they were not



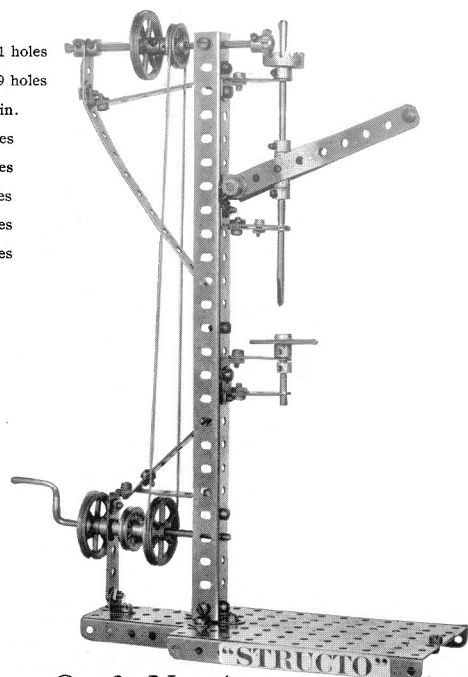
introduced until later. Some variations in the layout of these labels also occurred. At this time a label showing the Set Contents was pasted inside the lids. The inside of all the boxes seen over the years is light green

The system ultimately boasted 78 **parts** and of them 57 were listed in the 32pp manual, with #64 as the highest PN. #35,41-43,51,54,61 were missing, including the 2½" Disc #41 (see OSN 15) and DAS #42 & 43. The Set Screw #65 is illustrated but not listed

The **LV Motors A & B** (see OSN 15) were advertised

**Models** The manual contains 32 models for Sets 1-6 (not all in set sequence) plus 3 others including the Bridge on the cover. Only said Bridge has any constructional notes with it; the set models have a single photo & a list of parts. The photos vary in size from quite inadequate to quite large, witness the Biplane & Street Car on p893, both shown full-size. (Unless otherwise stated all the models will be shown full-size though the accompanying PL/text may be reduced, as is the case for the Biplane). The range of models is good and on the whole they look the part, though many, as noted in the Manual, need parts not in their Set. The Motor is only used in one, to drive the machinery in a small Machine Shop. None of the models

- MATERIAL**
- 2 Angle Plates, 1-5x11 holes
  - 1 Angle Plate, 1-3x 9 holes
  - 1 Angle Girder, 12½ in.
  - 1 Steel Beam, 15 holes
  - 2 Steel Beams, 9 holes
  - 1 Steel Beam, 6 holes
  - 3 Steel Beams, 5 holes
  - 5 Steel Beams, 3 holes
  - 19 Brackets
  - 1 Shaft, 6 in.
  - 1 Shaft, 4¾ in.
  - 2 Shafts, 1½ in.
  - 1 Crank Shaft
  - 12 Collars
  - 1 Spider Wheel
  - 3 Pulleys, 1½ in.
  - 2 Pulleys, 1 in.
  - 1 Spur Gear, ½ in.
  - 1 Crown Gear, ¾ in.
  - 34 Bolts and Nuts

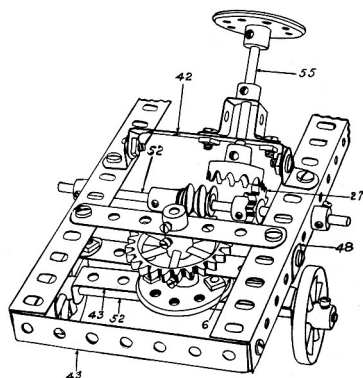


**Drill Press, Outfit No. 4**



have any but the limited degree of mechanical complexity typical of the period but one or two are interesting. An example is the Drill Press in the last column in which the Grooved Shaft used for the vertical spindle must be able to slide through the Contrate. Thus the Grooved Shaft acts as a Rod with Keyway, but its use in this way isn't mentioned anywhere in the manuals. The Lorry overleaf has geared centre-pivot steering but its mechanism isn't shown until the next manual. The non-outfit models are a simple Derrick Crane with a 2 foot jib & a Sightseeing Automobile, nothing special about either of them, and the Bridge overleaf (80% full-size). It would be interesting to know how well its rolling motion works in practice.

**1914** Apart from 11 extra models the material in the **40pp Photo Manual** is very similar to that in the 32pp. Its cover differs only in having '91394' after 'TRADE MARK' (below STRUCTO). The parts shown are the same but the Set Screw #65 was now listed. The manual contains 11 more models, more of the same really, and the only new large models are a 2ft long No.5 Traveling [Gantry] Crane, & a 40" high Large Windmill – a pylon with a fan of 8 of the Windmill Cards (see 16/459), chain driven from the base of the pylon. The slogan on the Windmill page (there are slogans on most pages) is novel: 'STRUCTO Is a Noiseless Pastime'. The steering mechanism that could be used in the Truck is shown in the 'use of parts' section, though the Truck builder isn't referred to it. It's a small photo and not very clear so a later line drawing of a similar version is shown below, 55% full-size. Also



new is a 2-stage Gearbox with an overall ratio of 4:1.

The **leaflet** with the early 'Second Addition' brochure mentioned in OSN 15 has a PR of FORM 510-5-14, so perhaps it is from May 1914. As in the 40pp manual, Sets 1-6 & 1A-5A are listed, also the A & B Motors, but a Transformer is mentioned for the first time, the No.5A at \$3.50. Another difference is that the inside of the No.6 lid, the only inside lid shown, has a picture on it, the one shown at the top of the next column (I'll refer to it as the '3 kids'), in a frame with No.6 to its right, & 'Fascinating \ Entertaining \ Instructive' to the left.

The **final T&N ad** to hand is from Oct. 1914. Die cast gears & key seated shafting are specifically mentioned, as in the 5/14 Brochure above, but nothing is said of the finish of the steel parts.

**1915** Another 'Second



**Addition' brochure** has been found, identical to the first but with it a different leaflet which lists Accessories, including some new parts. It's PR is FORM 515 5-2-15, so perhaps Feb.1915. The Accessories are the Type A Geared Speed Reducer, the Type B Worm Speed Reducer, both as shown in OSN 15, and a selection of parts through #65. The 13 new parts are: #42,43 (5,7h long DAS), 51 (M12a), 54 (Twist Beam), 61 (6" Crank

## Contents of Early Outfits

	1	1A	2	2A	3	3A	4	4A	5	5A	6
No. 62 Angle Girder 12½ in.				4	4	4	8		8	6	14
No. 63 Angle Girder 5½ in.										4	4
No. 1 Steel Beam, 25 holes		4	4	4	8		8	4	12	4	16
No. 2 Steel Beam, 19 holes						2	2	2	4	4	8
No. 3 Steel Beam, 15 holes				4	4		4	2	6	4	10
No. 4 Steel Beam, 11 holes	2		2		2	2	4	6	10	6	16
No. 5 Steel Beam, 9 holes		2	2	2	4		4	4	8	8	16
No. 6 Steel Beam, 7 holes	2	2	4		4	2	6	6	12	8	20
No. 7 Steel Beam, 6 holes					6		6		6	2	8
No. 8 Steel Beam, 5 holes	5	1	6	2	8		8	4	12	8	20
No. 9 Steel Beam, 4 holes	4		4		4	2	6	4	10	10	20
No. 10 Steel Beam, 3 holes	3	1	4		4		4	4	8	8	16
No. 11 Steel Beam, 2 holes	2		2	2	4		4	4	8	4	12
No. 12 Flat Plate, 4x9 holes						1	1		1	1	2
No. 13 Flat Plate, 6x11 holes							1	1		1	2
No. 14 Angle Plate, 2- -2x9 holes										2	2
No. 15 Angle Plate, 1- -3x9 holes	2		2		2		2		2	2	4
No. 16 Angle Plate, 1- -8x4 holes										2	2
No. 17 Angle Plate, 3- -3x11 holes										2	2
No. 18 Angle Plate, 1- -5x11 holes		2	2		2		2		2	2	4
No. 19 Angle Plate, 1- -10x6 holes										2	2
No. 20 Wagon Wheel	4		4		4		4		4		4
No. 21 Car Wheel								4	4		4
No. 22 Grooved Pulley 1½ inch						1	1		1	1	2
No. 23 Grooved Pulley 1 inch		2	2		2	2	4		4		4
No. 24 Grooved Pulley ½ inch	1		1		1	1	1	2	2	4	6
No. 25 Spider Wheel	1		1		1	1	2		2	1	3
No. 26 Spur Gear 1½ inch						1	1		1	1	2
No. 27 Spur Gear 1 inch								1	1	1	2
No. 28 Spur Gear ¾ inch						1	1	1	2		2
No. 29 Worm				1	1	1	2		2	2	4
No. 30 Sprocket 2 inch						1	1		1	1	2
No. 31 Sprocket 1 inch								1	1	1	2
No. 32 Crown Gear 1½ inch								1	1	1	2
No. 33 Crown Gear ¾ inch						2	2		2		2
No. 60 Collars	2	2	4		4	2	6	2	8	8	16
No. 34 Hanger	3		3		3		3		3	3	6
No. 36 Clevis				1	1		1		1	1	2
No. 37 Pawl				1	1	1	2		2	2	4
No. 38 Hook	1		1		1		1		1	1	2
No. 39 Long Bolt with Nut	2		2	2	4	1	5	5	10	14	24
No. 40 Short Bolt with Nut	20	10	30	20	50	20	70	50	120	110	230
No. 44 Sprocket Chain 1 ft. long								2	2	4	6
No. 45 Cable Cord		1	1		1		1	1	2	2	4
No. 46 Screw Driver	1		1		1		1		1		1
No. 47 Steel Wrench		1	1		1		1	1	2		2
No. 48 Bracket	12		12	12	24		24	24	48	12	60
No. 58 Shaft 11½ in. long Key Seated								2	2		2
No. 49 Shaft 8 in. long Key Seated							1	1	1		2
No. 50 Shaft 6 in. long Key Seated								2	2		2
No. 52 Shaft 4¾ in. long Key Seated		2	2		2		2		2	2	4
No. 53 Shaft 3¾ in. long Key Seated	2			2	2		2		2	2	4
No. 55 Shaft 2½ in. long Key Seated		1	1		1		1	1	2	2	4
No. 56 Shaft 1½ in. long Key Seated	1		1		1		1	1	2	2	4
No. 57 Crank Shaft—Key Seated	1		1		1	1	2	1	3	1	4
No. 64 Coil Spring								1	1	1	2
Book of Instructions	1		1		1		1		1		1

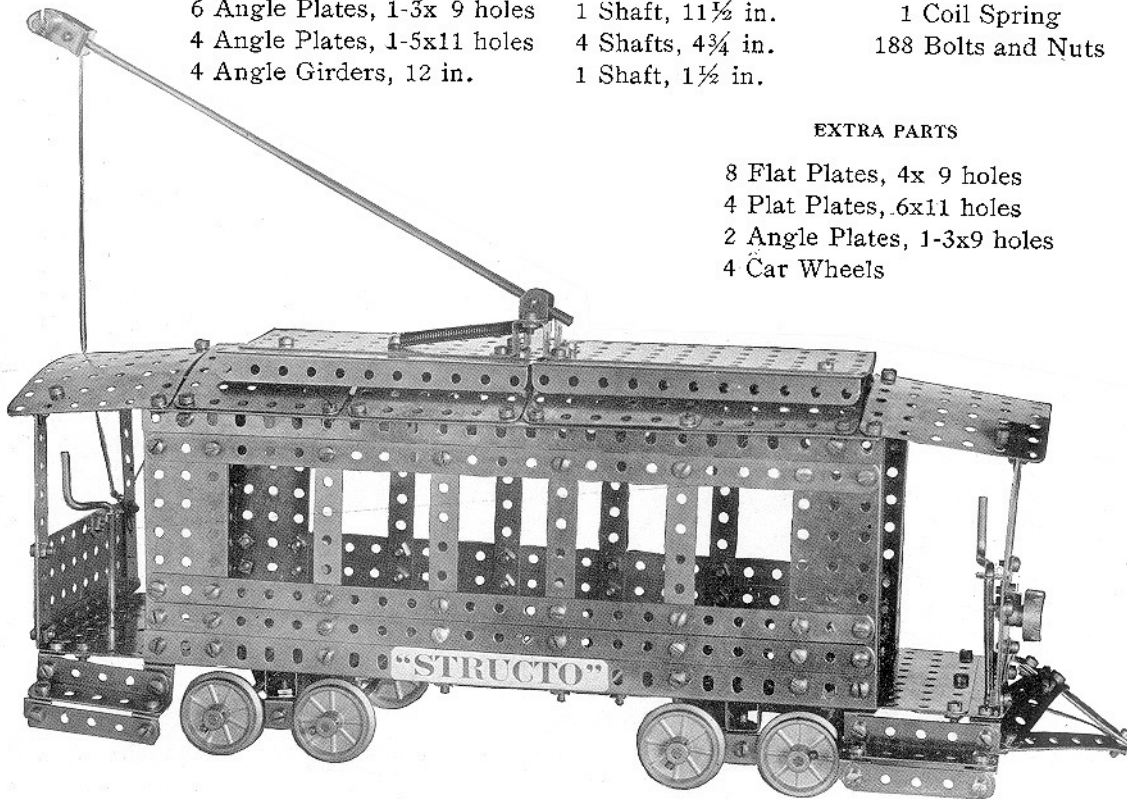
## Street Car, Outfit No. 6

### MATERIAL

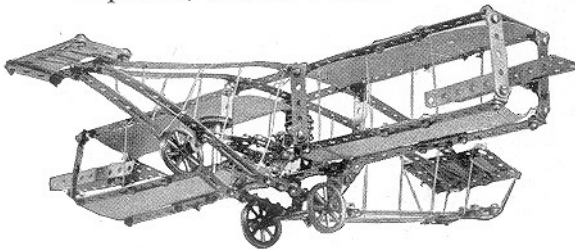
10 Steel Beams, 25 holes	10 Flat Plates, 4x 9 holes	2 Crank Shafts
14 Steel Beams, 9 holes	6 Flat Plates, 6x11 holes	6 Collars
2 Steel Beams, 7 holes	6 Hangers	1 Spur Gear
17 Steel Beams, 5 holes	1 Clevis	1 Pulley, ½ in.
2 Steel Beams, 4 holes	41 Brackets	8 Car Wheels
6 Angle Plates, 1-3x 9 holes	1 Shaft, 11½ in.	1 Coil Spring
4 Angle Plates, 1-5x11 holes	4 Shafts, 4¾ in.	188 Bolts and Nuts
4 Angle Girders, 12 in.	1 Shaft, 1½ in.	

### EXTRA PARTS

8 Flat Plates, 4x 9 holes
4 Flat Plates, 6x11 holes
2 Angle Plates, 1-3x9 holes
4 Car Wheels



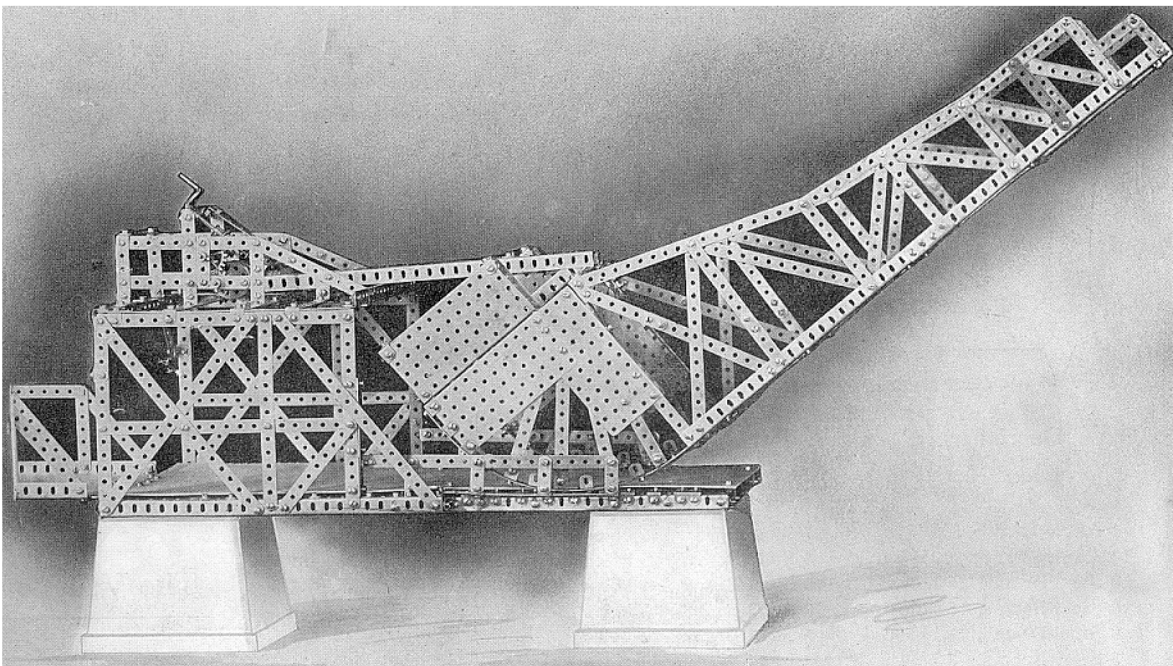
## Biplane, Outfit No. 5



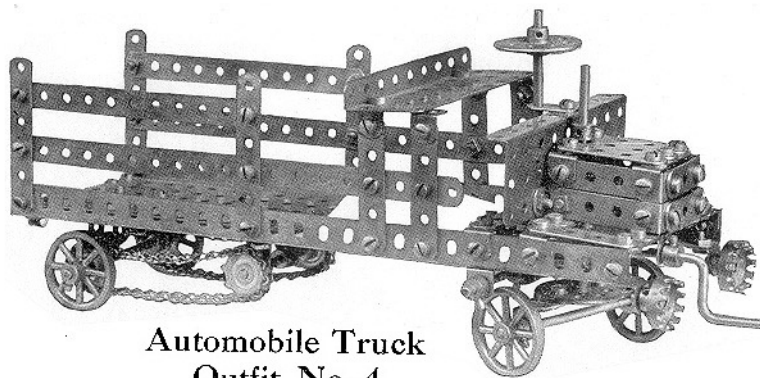
4 Steel Beams, 25 holes	1 Grooved Pulley
2 Steel Beams, 19 holes	3 Wagon Wheels
4 Steel Beams, 15 holes	2 Hangers
2 Steel Beams, 11 holes	2 Shafts, 3¾ in.
8 Steel Beams, 9 holes	2 Shafts, 1½ in.
4 Steel Beams, 7 holes	1 Worm
2 Steel Beams, 6 holes	6 Collars
10 Steel Beams, 5 holes	36 Angle Brackets
9 Steel Beams, 4 holes	110 Short Bolts and Nuts
8 Steel Beams, 3 holes	1 Cable Cord
4 Steel Beams, 2 holes	
2 Angle Plates, 1x3x9	

### EXTRA MATERIAL

1 Worm
--------







Automobile Truck  
Outfit No. 4

- |                            |                          |
|----------------------------|--------------------------|
| 2 Angle Girders 12½ in.    | 2 Long Bolts with Nuts   |
| 2 Steel Beams, 19 holes    | 70 Short Bolts with Nuts |
| 2 Steel Beams, 11 holes    | 24 Brackets              |
| 2 Steel Beams, 7 holes     | 2 Shafts 3¼ in.          |
| 1 Steel Beam, 6 holes      | 1 Shaft 4¾ in.           |
| 4 Steel Beams, 5 holes     | 1 Shaft 2½ in.           |
| 6 Steel Beams, 4 holes     | 1 Crank Shaft            |
| 2 Steel Beams, 3 holes     |                          |
| 4 Steel Beams, 2 holes     | <b>EXTRA MATERIAL</b>    |
| 1 Flat Plate 6x11 holes    | 5 Steel Beams, 4 holes   |
| 2 Angle Plates 1-3x9 holes | 1 Steel Beam, 2 holes    |
| 4 Wagon Wheels             | 1 Flat Plate, 6x11 holes |
| 2 Spider Wheels            | 2 Sprockets              |
| 1 Spur Gear 1½ in.         | 1 Crown Gear ¾ in.       |
| 1 Spur Gear ¾ in.          | 3 Collars                |
| 1 Worm                     | 20 Short Bolts and Nuts  |
| 2 Crown Gears ¾ in.        | 1 Sprocket Chain         |
| 6 Collars                  | 4 Brackets               |
| 3 Hangers                  | 2 Shafts 3¾ in.          |

## Practical Education is The Foundation of Success

### Bascule Bridge and Gear Drive

CORRECT mechanical principles are followed in this model and it operates perfectly. The dimensions of this model can be easily determined by any one, simply by counting the holes in the beams used; each hole representing one-half inch. The gear operating this bridge is shown in detail in figure 17. The power is connected to the lifting span by a cable from the winding drum.

The cable is attached to the center of the top of the lifting span and is covered by a U-shaped beam made from two No. 62 angle girders bolted together and attached to the frame work near the gear. The other end of the beam is not fastened to the lifting span, but slides forward on the guide rail when the bridge is open, as shown on page 16.

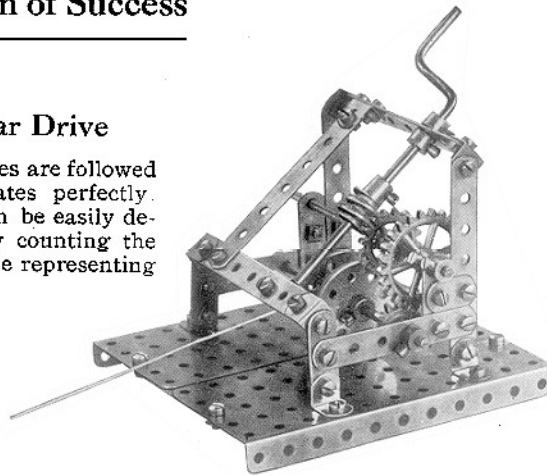
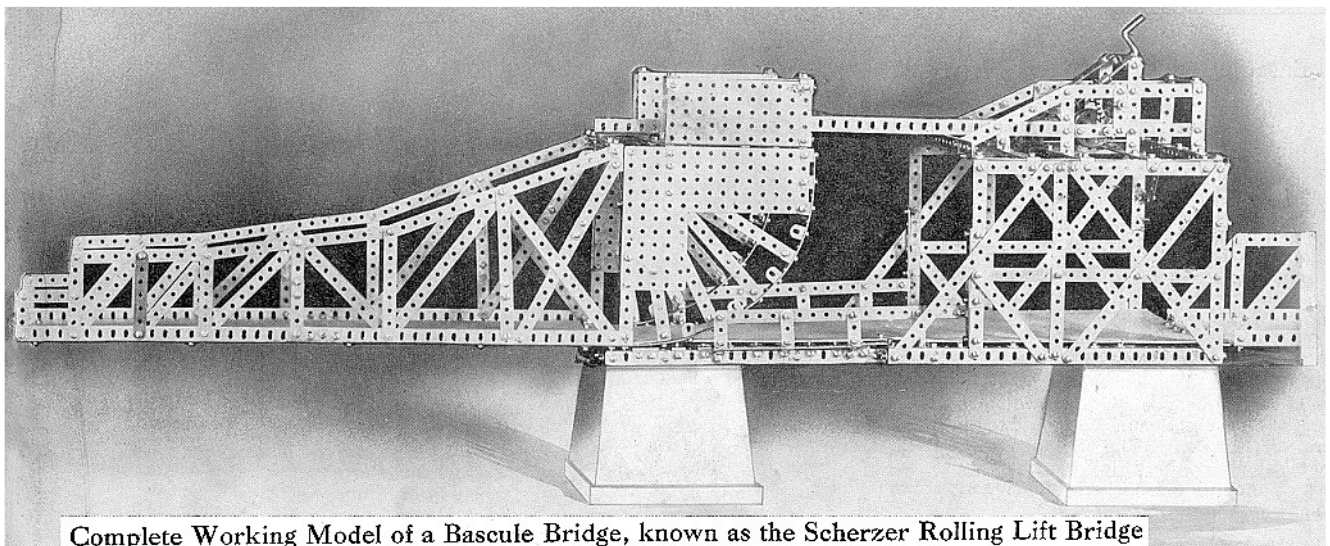


Fig. 17

### Bascule Bridge

#### MATERIAL

- |                              |
|------------------------------|
| 2 Steel Beams, 25 holes      |
| 24 Steel Beams, 19 holes     |
| 34 Steel Beams, 15 holes     |
| 79 Steel Beams, 11 holes     |
| 17 Steel Beams, 9 holes      |
| 17 Steel Beams, 7 holes      |
| 7 Steel Beams, 6 holes       |
| 9 Steel Beams, 5 holes       |
| 10 Steel Beams, 4 holes      |
| 14 Angle Girders, 12½ in.    |
| 2 Angle Girders, 5½ in.      |
| 8 Angle Plates, 1-5x11 holes |
| 100 Brackets                 |
| 12 Collars                   |
| 2 Shafts, 4¾ in.             |
| 1 Shaft, 2½ in.              |
| 4 Shafts, 1½ in.             |
| 1 Crank Shaft                |
| 1 Spur Gear, 1 in.           |
| 1 Spur Gear, 1½ in.          |
| 1 Spur Gear, ¾ in.           |
| 1 Worm                       |
| 2 Spider Wheels              |
| 1 Hook                       |
| 16 Steel Beams, 3 holes      |
| 16 Steel Beams, 2 holes      |
| 1 Hank Cord                  |
| 388 Short Bolts              |
| 11 Long Bolts                |
| 399 Nuts                     |



Complete Working Model of a Bascule Bridge, known as the Scherzer Rolling Lift Bridge



Handle), 66,67 (5\*5h & 1\*4\*5h Plates), 69-73 (Rack Guide & Rack, Engine Crank, Coupling, Hanger for Shafting), 100 (Gear Housing). Most of them were shown in OSN 15.

The advertising pages of the **60pp Photo Manual** are missing but the Rack & Rack Guide are used in one of the new No.4 models in it, a Pile Driver. The use of these parts would seem to imply that changes had been made to the contents of the sets by this time, but the quantity of extra A/Gs needed for another new model, the No.6 Eiffel Tower, right, indicates that the standard in MCS had yet to be reached. One of the other new parts, the Twist Beam #54, is used in one of the 'use of parts' details on p50, and 'can be purchased by the piece'. New mechanisms in this section include a Governor using 1½" Pulleys as 'balls', a lever-operated Clutch (2 Contrates), a Reversing Mechanism (a Pinion between 2 Contrates, again lever-operated), and a Block and Tackle.

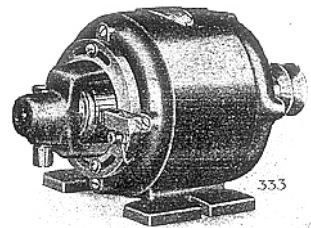
On the **models**, this manual is an improvement in that they are presented in set order, and there are now instructions for many of the larger ones. Compared with the 40pp manual there are 41 models for Sets 3-6 against 25 before. The new ones include several small machine tools, a Railroad Semaphore [Signal Gantry], the Pile Driver already mentioned, a smaller Street Car, an Electric Locomotive, 4 fairground models including the Merry-Go-Round far right, & a Ferris Wheel, both with 2ft diameter 'wheels', and the Eiffel Tower, some 7ft high with an elevator. The photos are still not adequate but in many cases the written instructions do help a lot. Those for the Merry-Go-Round occupy nearly a whole page of small type – in the photo it may be possible to see that the horses are pivoted by a Shaft through their hindquarters and they rock by using 'fine wire or sister's hairpins' to link them to Spider Wheels above. Said Wheels are on the ends of Shafts which carry a Pinion at their inner end, in mesh with a Contrate on the vertical shaft. All the large new models need extra parts and for the 3 largest they are priced as well as listed – at \$6.10 the Eiffel Tower is the most expensive (the No.6 Set cost \$20). The large Rolling Lift Bridge is still included in this manual but not the other two non-outfit models.

Next a **3-panel Leaflet** seen on Ebay. It has a boy playing with a Mechanical Digger on the front with a real digger in a circle behind, and EMPIRE BUILDERS in small letters next to it. On an inside panel the 1915 range is listed: Sets 1-6 & 1A-5A, and the 'new' No.1 Motor, as in OSN 15 (with no mention of the A & B Motors). It is shown with red sideplates and cost \$2, but was given free with Sets 4-6 (still priced at \$5, \$10, & \$20). Sets 2 & 4 are illustrated with line drawings which look like those used later but are not clear enough to be sure. If they are then the sets are those with the later increased contents including the 2½" Disc #41. Certainly their inside lids are completely covered by the '3 kids' picture already seen inside the frame on the No.6 lid.

**1916** The first item is a heavily revised, new-style manual, 112 pages plus covers, which could be from late 1915, but I'll call it the '**1<sup>st</sup> 1916**' manual – it lists all the items in the 1915 material plus some new ones. but not the Multi-Unit Girder. Its cover is like the FORM 536 one shown later but without that reference in the bottom left corner. Notice that the boys have less old-fashioned clothes and that both sides of the Bridge are half raised. The parts listed are #1-75, and #100, that's to say the final complete range except the M-U Girder parts, and the much later Automobile Wheels. The range of Sets is as before, at the same prices, but with new illustrations reflecting their revised 'MCS standard' contents. The boxes themselves look to be the same size as the earlier ones, and with the same partitioning & trays. The outside of the lids are not shown but at first they may have been like the earlier ones with one side of the Bridge half raised; then all but the No.6 were replaced, including the No.1, by the pattern at the top of the next column, in line with the revised manual cover. For Sets 2-5 the inside of the lid is fully covered by the '3 kids' picture, No.6 is as already described, and the No.1 is similar to it except that the framed picture is very small. All the parts in the range were included in



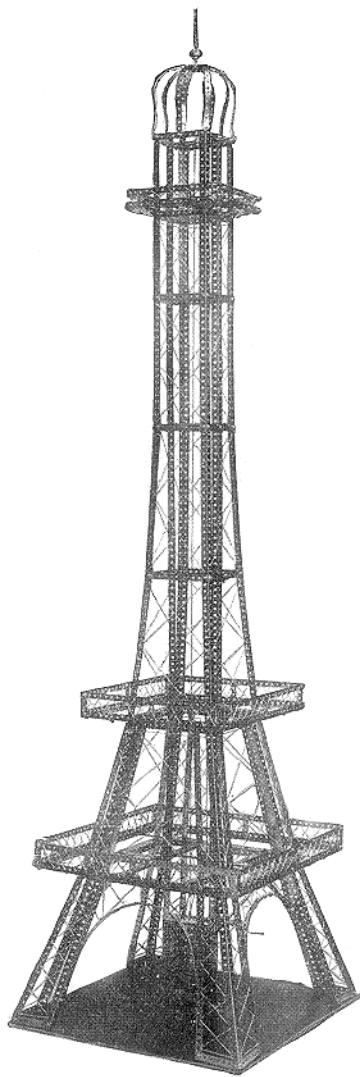
the Sets except the Shafting Standard #73 & The Gear Housing #100. Compared with the 1913 sets the No.1 inventory was increased from 49 parts + 22 N&B, to 55 + 26 N&B, and for the No.6 from 374 + 254 N&B to 687 + 480 N&B. So the No.6 was quite a large outfit, and included 36 A/G, 23 Gears, 4 Sprockets, 32 Plates, 6x 2½" Discs, 6 Couplings, 18 Collars, & 120 A/B. 2½" Discs were included from Set 2, and Gears from No.3 instead of No.4 before. New items advertised are the Fan & Universal Motor, both as in OSN 15, and the 'Standard' Type Motor shown below. It was 'designed especially for operating small machines, such as window display models, coffee grinders, small water pumps, vacuum cleaners, .....'. It was rated at ¼<sub>40</sub> H.P. at 1750 rpm, and there were 2 versions, the B-10 for 110v a.c. at \$12.50, & the B-20 for 115v d.c. at \$12. (The Universal cost \$4.) The No.5A Transformer was replaced by the No.19 at the same price (it gave 3, 6, & 9v), and the No.21 at \$4 with a step rheostat (as on the Hornby type) giving 1½ to 15v in 1½v increments (it says, though the contact arm is shown sweeping over only 6 contacts).



**Models** With 112 pages the manual is much bigger and it contains very roughly twice as many models as before. Even more important the models are illustrated by larger, clear line drawings with written instructions in nearly all cases, not always comprehensive but always a great help. Another change is that all the models can be made from the parts in the stated set. The enlarged contents have helped in this respect, but some models have been changed to allow them to be made from the appropriate set. The Eiffel Tower for example is now some 2ft shorter, and the Street Car has been simplified. Some attractive models have gone completely though including the large Merry-Go-Round, the Machine Shop, and the 'trade-mark' Rolling Lift Bridge. More models are now motor-driven but still not many, and none are vehicles. The 'use of parts' section has been reduced in size with most of the examples of gearing and mechanisms now spread among the models throughout the manual. New mechanisms include a chain-driven, bevel Differential, and a simple 3-speed & reverse Auto Transmission, neither of which are used in any of the models. Also a right-angle drive using the Flexible Shaft Coupling #68, and a Universal based on double brackets, made from pairs of A/Bs, bolted back to back. The new models include 2 Sewing Machines, 2 Clocks, including the Hall Clock in MCS, a Ferry [Transporter] Bridge and a Lifting Bridge, a Taxicab, a Steam Tractor, a Locomotive, a Coaling Station, an improved version of the earlier Biplane, and a Derrick with a 2ft jib. A selection of these models is shown later from the 'Form 536' manual.

The next item is also a manual, the '**2<sup>nd</sup> 1916**', identical to the last one except that the prices of some of the sets have been changed by using rubber stamps to obliterate the old ones and to add new ones alongside. The changes are the No.3 at \$3 instead of \$3.50, the 2A at \$1, ex \$1.50, and the 3A at \$2, ex \$1.50.

Then, the first mention of the **M-U Girder**, in another Ebay item, an ad, said to be from 1916. But just when in 1916 isn't known.



Eiffel Tower, Outfit No. 6

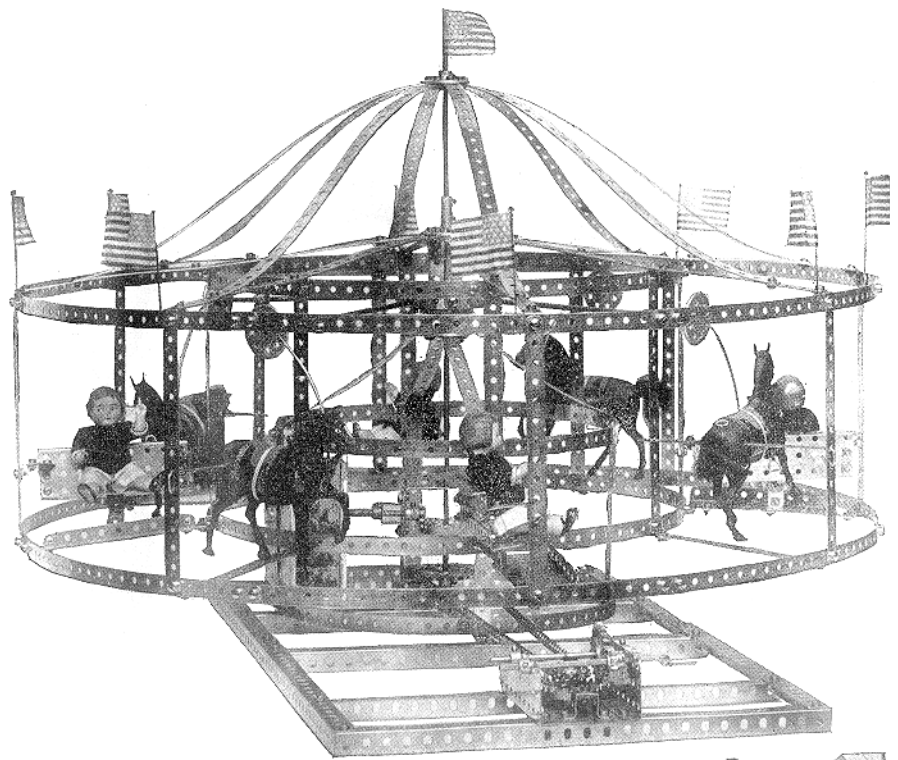
MATERIAL

64 Angle Girders, 12½ in.	1 Sprocket, 2 in.
14 Angle Girders, 5½ in.	1 Sprocket, 1 in.
16 Steel Beams, 25 holes	3 Spider Wheels
24 Steel Beams, 15 holes	3 Angle Plates, 1x5x11 holes
4 Steel Beams, 11 holes	1 Shaft, 3¾ in.
20 Steel Beams, 9 holes	2 Shafts, 6 in.
8 Steel Beams, 7 holes	1 Shaft, 11½ in.
2 Steel Beams, 6 holes	1 Crank Shaft
18 Steel Beams, 5 holes	8 Collars
36 Steel Beams, 4 holes	2 ft. Sprocket Chain
20 Steel Beams, 3 holes	54 Angle Brackets
10 Steel Beams, 2 holes	2 Cable Cords
1 Crown Gear, ¾ in.	287 Bolts and Nuts
2 Pulleys, 1 in.	

EXTRA MATERIAL

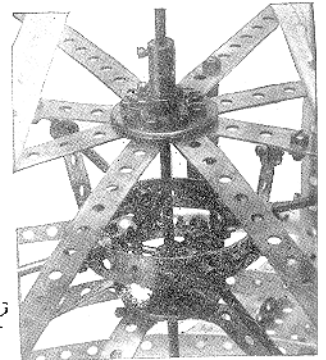
50 Angle Girders, 12½ in.	@ 7¢	-	-	\$3.50
10 Angle Girders, 5½ in.	@ 5¢	-	-	.50
14 Steel Beams, 15 holes	@ 5¢	-	-	.70
4 Steel Beams, 9 holes	@ 5¢	-	-	.20
16 Steel Beams, 4 holes	@ 5¢	-	-	.80
4 Steel Beams, 3 holes	@ 2 for 5¢	-	-	.10
33 Bolts and Nuts	@ 10¢ per dozen	-	-	.30
				\$6.10

The arrangement of detail regarding lowering and raising device we will leave to the ingenuity of the builder.



## Structo was Prepared to Build Solomon's Temple

CENTER POLE GEAR HOUSING



Large Merry-Go-Round, Outfit No. 6

MATERIAL

9 Angle Girders, 12½ in.	4 Steel Beams, 2 holes
1 Crank Shaft	4 Hangers
1 Shaft, 3¾ in.	16 Collars
1 Shaft, 6 in.	3 Crown Gears, 1½ in.
4 Shafts, 8 in.	1 Sprocket, 2 in.
2 Shafts, 1½ in.	1 Sprocket, 1 in.
1 Shaft, 11½ in.	1 Spur Gear, 1½ in.
1 Shaft Coupling	6 Spur Gears, ½ in.
39 Steel Beams, 25 holes	7 Spider Wheels
9 Steel Beams, 19 holes	3 ft. Sprocket Chain
8 Steel Beams, 15 holes	15 Angle Plates, 1x3x9 holes
16 Steel Beams, 11 holes	1 Angle Plate, 4x9 holes
2 Steel Beams, 9 holes	254 Bolts and Nuts
1 Steel Beam, 7 holes	76 Angle Brackets
4 Steel Beams, 4 holes	1 Coil Spring
8 Steel Beams, 3 holes	

EXTRA MATERIAL

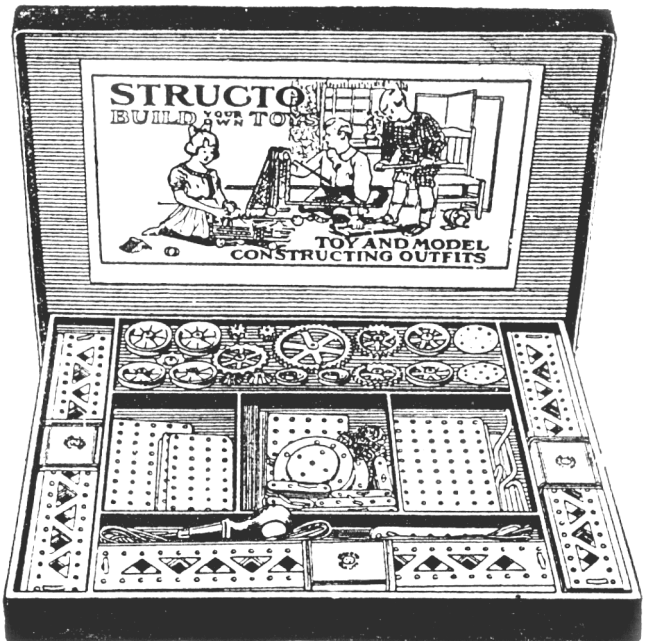
2 Shafts, 8 in.	@ 8¢	-	-	\$ .16
23 Steel Beams, 25 holes	@ 50¢ per dozen	-	-	1.00
1 Steel Beam, 19 holes	@ 5¢	-	-	.05
1 Crown Gear, 1½ in.	@ 25¢	-	-	.25
4 Spur Gears, 1 in.	@ 20¢	-	-	.80
4 Spider Wheels	@ 10¢	-	-	.40
11 Angle Plates, 1x3x9 holes	@ 7¢	-	-	.77
16 Angle Brackets	@ 10¢ per dozen	-	-	.20
1 Shaft Coupling	@ 10¢	-	-	.10

\$3.73

HORSES AND DOLLS NOT FURNISHED WITH OUTFITS



**1916-17** First a 40 page plus covers **Engineering Manual** for 3 new sets: Junior, Structo, & Chief Engineer. A B&W copy of its cover is shown below. All three Sets contained



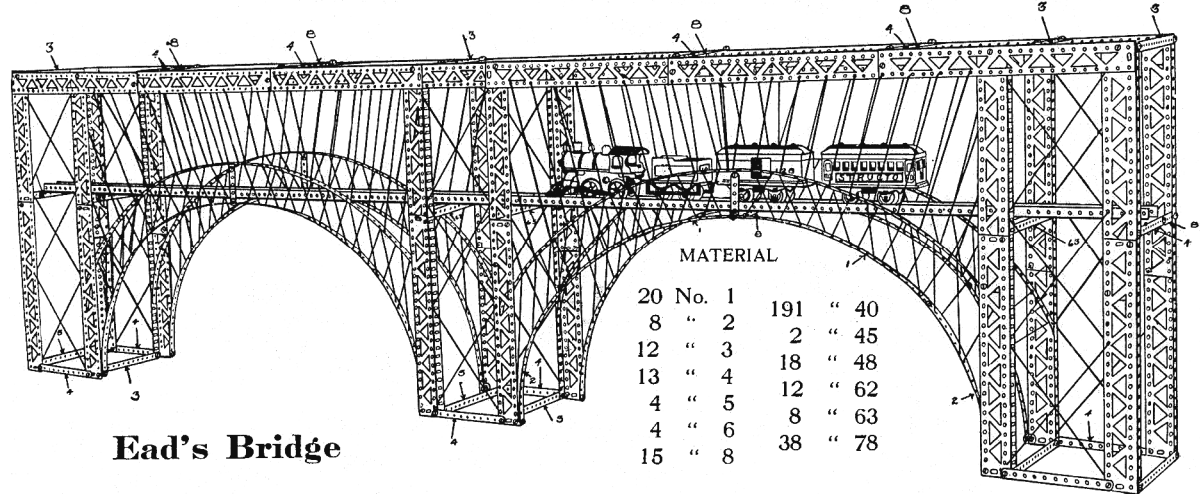
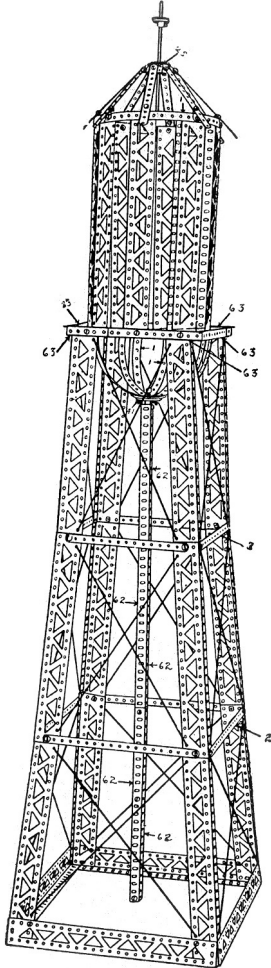
the new M-U Girder #78 & Girder Brace #77, parts which were never included in the standard sets, along with a selection of 'standard' pieces. No inventories are given in the manual, though it's possible they are on the missing back cover. From the parts used in the manual models the Sets included respectively 16,24,40 Girders, 8 Braces, and 78,108,208 N&B. They were priced at \$3, \$5, & \$10, and the Girders were available separately at 10¢ each, 50¢ for 6, or \$1 for 12 (all STRUCTO sets & parts were always post free). A card included in each Engineer outfit could be mailed in to give membership of the Structo Engineering Corps, and then 'we

will keep you advised of the new designs of Models that our Experimental Department is constantly turning out'. Also every member sending a drawing or photo of an original model 'merits the degree of "S.E.C." which entitles him to a Structo Engineer's Button'. Note the 'him'. All 3 sets are illustrated in the manual and the Chief is shown in the last column. The picture inside the lid, the '3kids/window' is similar to the '3 kids' but the background is different with a window & some furniture. The early Type A/B Motor can still be seen to the right of the RH boy's feet. (No doubt this illustration was used inside the standard sets too but I've not seen an example so far – earlier sets seem commoner than later ones.) Nothing is known of the design of the top of the lid. Several new items were advertised and the only one no longer listed was the Standard Motor. New Motors were Nos.2 & 3 (as in OSN 15) at \$2 & \$2.25, and a No.0 is referred to being available in a separate box with Sets 1-3 at \$1 extra (the price of the No.1 Motor had been reduced to \$1.50). The No.0 wasn't illustrated but may have been the No.1 without the on/off switch. Sets 4-6 were now supplied with the No.2 Motor. The other new items were the Power Plant (\$5), the Countershaft (\$1), both as in OSN 15, and the No.1 Transformer at \$2 – it gave 6v, the 'voltage upon which Structo Motors are to be operated with best results'.

The 25 **models** in the Manual are mainly Bridges, Towers (with & without elevators), & Cranes, all with structures made largely from the Girders. Other models include 2 Windmills, a Zepellin, & another version of the Hall Clock (without the ratchet wind). The Girder is obviously a useful part and is used effectively in many of the models, but in some they are perhaps too much of a good thing. One model from the Junior set is shown right, and two from the Chief are at the bottom of this and the facing page.

Next the '**Form 536**' manual, the one mentioned earlier with a cover, shown at the top of the facing page, that has FORM 536 in the bottom left corner. It again has 112 pages plus covers and the model pages are the same except that 2 in the middle have disappeared and one has been added at the end. The resulting 'free' page is used to feature the M-U Girder & the Engineering Sets. The

**Water Tower**



**Ead's Bridge**

MATERIAL			
20	No. 1	191	" 40
8	" 2	2	" 45
12	" 3	18	" 48
13	" 4	12	" 62
4	" 5	8	" 63
4	" 6	38	" 78
15	" 8		

**MATERIAL**

6	No. 1
6	" 2
5	" 3
8	" 4
1	" 23
1	" 25
1	" 34
8	" 39
88	" 40
1	" 41
2	" 45
16	" 48
1	" 50
1	" 56
2	" 60
6	" 62
8	" 63
24	" 78

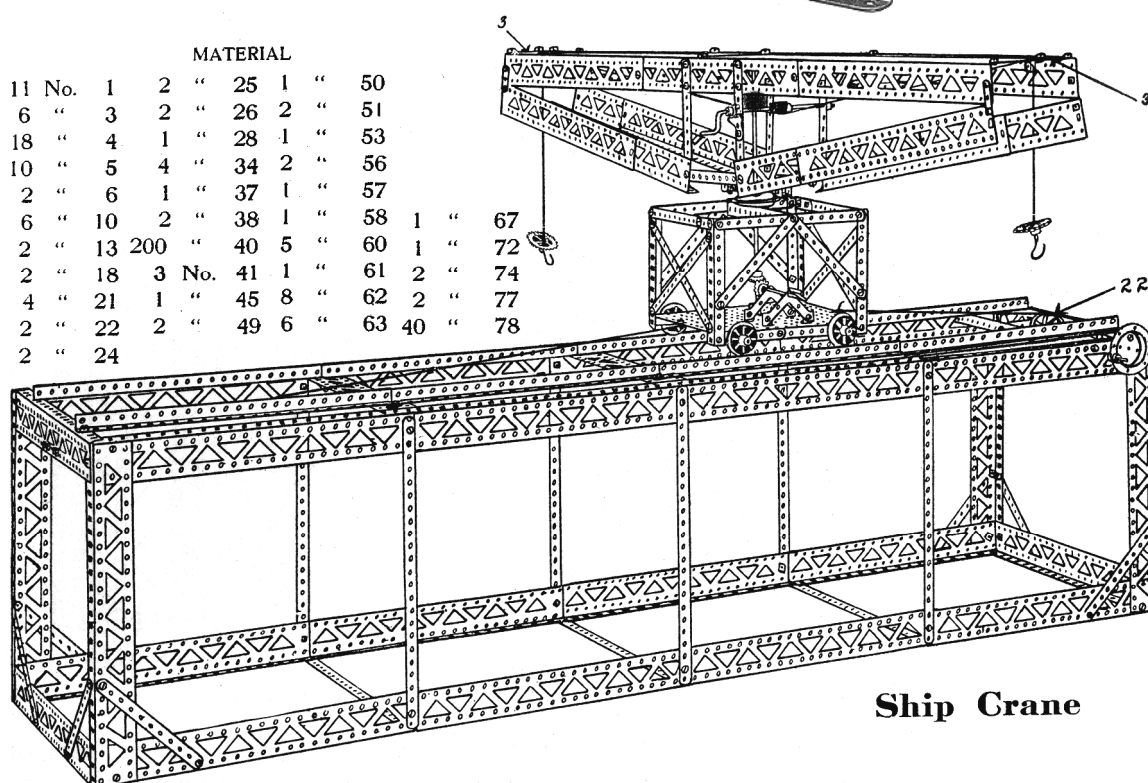


items covered in the advertising pages are as in the Engineering manual, including the new prices for the standard sets (no longer overprinted), but there is also a new Transformer called the Danditoy at \$2.85. The claimed voltage range was 2½-27½v in 2½v steps, and as in the No.21 the 'regulator switch' is an arm sweeping over 6 buttons. There are 3 terminals on the front panel so perhaps there were 2 voltage ranges depending on which pair was used. The only other change was that the price for 6 of the M-U Girders was increased by 10¢ to 60¢. (The prices of the individual parts hadn't changed at all up to this point except that at first all Strips cost 5¢ each, but at some time after the 'photo' manuals those with less than 7 holes were reduced - for example a 6h was 4¢, a 2h, 2¢.

Now another manual which I'll call the '536\*'. It's the '536' above, with identical covers & model pages, but with some pages at the back cut out (the Set Contents & some of the advertising) and new pages glued onto the stubs. There were 3 main changes. First, the linking sets are no longer mentioned (and are not listed in any later material; Gilbert continued his ERECTOR linking sets until 1920). Secondly, no prices are given for the standard sets - America had entered WW1 in April 1917. Thirdly, the Cadet Set, smaller than the No.1 but with 4 of the 2½" Discs, was listed for the first time. The top of the lid is shown and looks like the other sets of the period. Another difference, the No.0 Motor was no longer offered as an extra with Sets 1-3 and no further references to it are known.

A selection of **models** from this manual are shown overleaf

		MATERIAL						
11	No.	1	2	"	25	1	"	50
6	"	3	2	"	26	2	"	51
18	"	4	1	"	28	1	"	53
10	"	5	4	"	34	2	"	56
2	"	6	1	"	37	1	"	57
6	"	10	2	"	38	1	"	58
2	"	13	200	"	40	5	"	60
2	"	18	3	No.	41	1	"	61
4	"	21	1	"	45	8	"	62
2	"	22	2	"	49	6	"	63
2	"	24						



**Ship Crane**

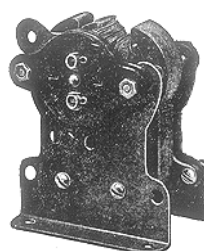
(the 8 small ones are from the Cadet manual). For the Coaling Station it is explained that the real machine is 'used on railroads and wharves for taking coal from pits underneath track and elevating same into a "pocket" or bin.' In the model peas in the boot are carried upwards in buckets made from 4 A/Bs bolted together and wired to the Chain, and then tip out at the top and return to the boot down the chute provided.

A Dec. 1917 ad gives a price for the Cadet set, and new prices for all the others: \$1 for the Cadet; \$1.50, 2.50, 3.75, 6, 12, 25 for Nos.1-6; and \$4, 6, 12 for the Junior, Structo, & Chief Engineer. The M-U Girder is listed and the No.4 Motor is shown (see below), along with a No.10 Auto Builder set.

**1918** First a **Cadet manual, FORM 539**, with 24 pages plus covers. The front is shown below & is printed in black, or a



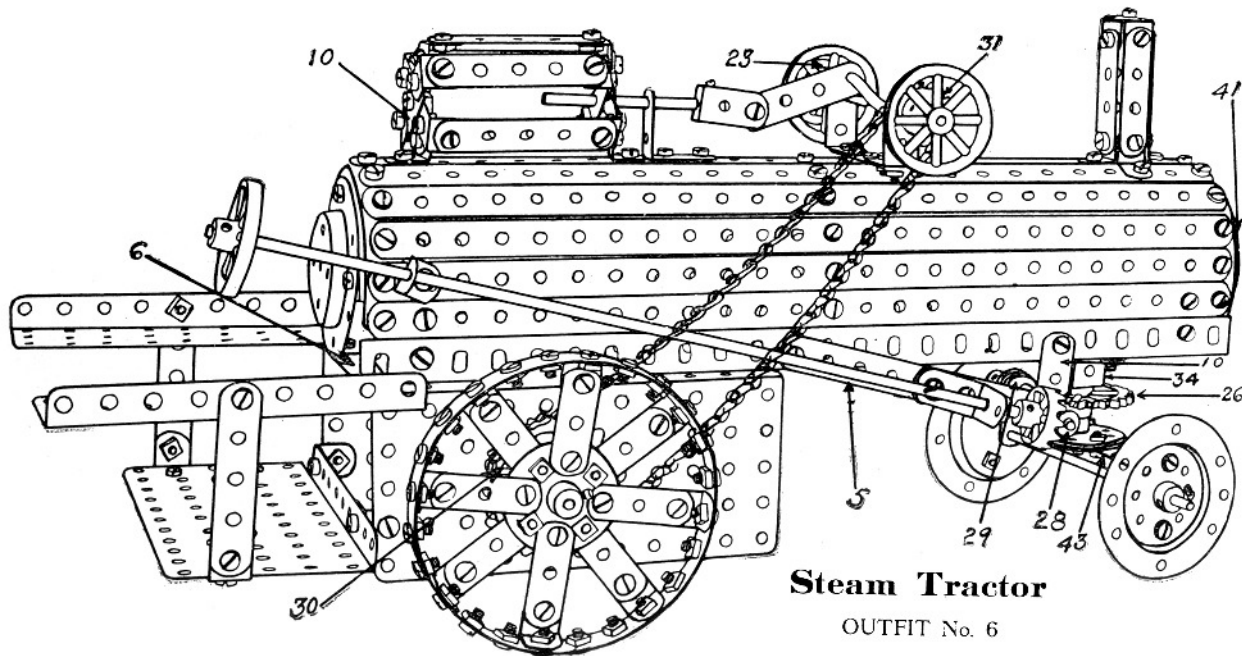
very dark colour, on a light ground, with STRUCTO & CADET OUTFIT in red. On the back cover is the logo shown between 2 of the models overleaf, probably that of the Toy Manufacturers Association of the U.S.A. which Gilbert had founded in 1916. The sets are as in the 1917 PL but the Cadet & 1-6 have no



prices. Only two LV Motors are advertised, the No.3 as before, & the No.4 left, at \$2, just 25¢ less than the No.3. It has the reversing switch mounted at the top of the front sideplate, & is said to be 'provided with reverse switch and gauze brushes in tubular holders; same type of Motor as is included in 'Outfits 3A, 4, 5, and 6'.

(Note the 3A - were 'A' sets still available despite no longer being listed?) The Universal Motor was available 'Price on application'. Another poa item was the No.21 Transformer, the only one apart from the No.1, still at \$2. All the other accessories were listed but some had increased in price a little: Types A & B Speed Reducers to \$1 & \$1.50; and the Girder Brace to 15¢ a dozen. A 5½" M-U Girder #79 was listed as well as the 12½", at 75¢ a dozen, or 40¢ a half dozen. Most of the prices of individual parts still remained the same but Strips now cost 3-6¢, against 2-5¢





**Steam Tractor**

OUTFIT No. 6

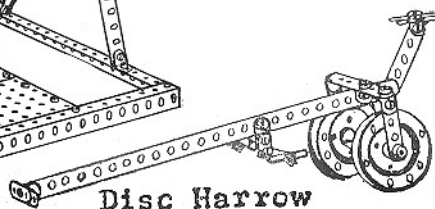
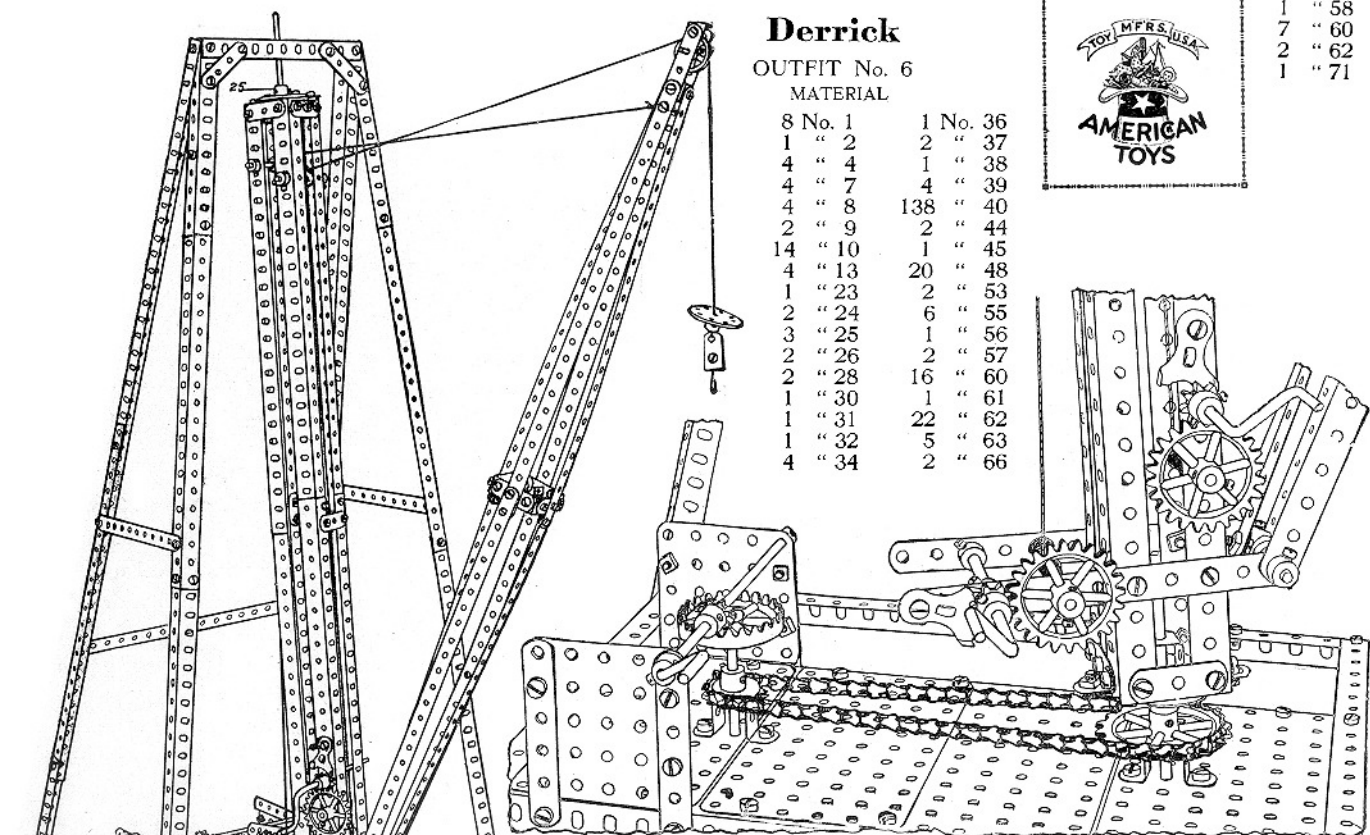
MATERIAL	
13	No. 1
3	" 4
1	" 5
2	" 6
9	" 8
5	" 9
24	" 10
8	" 11
2	" 15
3	" 18
3	" 20
1	" 23
5	" 25
1	" 26
1	" 28
1	" 29
1	" 30
1	" 31
1	" 33
1	" 34
1	" 36
1	" 39
208	" 40
4	" 41
2	" 43
2	" 44
47	" 48
2	" 50
4	" 51
1	" 53
1	" 55
1	" 58
7	" 60
2	" 62
1	" 71

**Derrick**

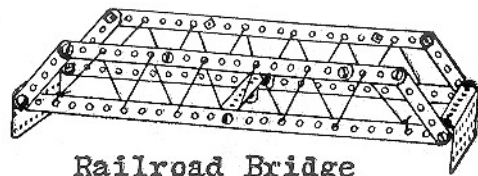
OUTFIT No. 6

MATERIAL

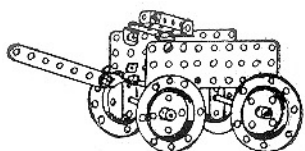
8	No. 1	1	No. 36
1	" 2	2	" 37
4	" 4	1	" 38
4	" 7	4	" 39
4	" 8	138	" 40
2	" 9	2	" 44
14	" 10	1	" 45
4	" 13	20	" 48
1	" 23	2	" 53
2	" 24	6	" 55
3	" 25	1	" 56
2	" 26	2	" 57
2	" 28	16	" 60
1	" 30	1	" 61
1	" 31	22	" 62
1	" 32	5	" 63
4	" 34	2	" 66



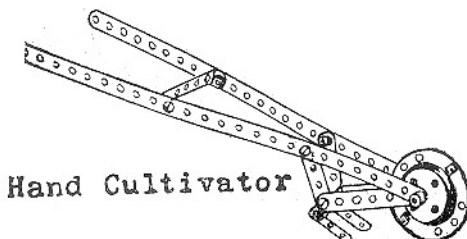
**Disc Harrow**



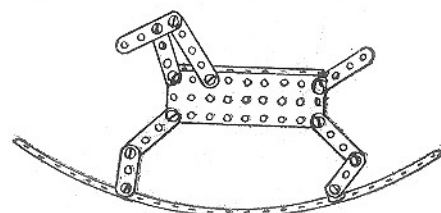
**Railroad Bridge**



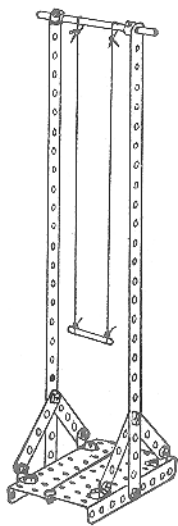
**Express Wagon**



**Hand Cultivator**



**Rocking Horse**

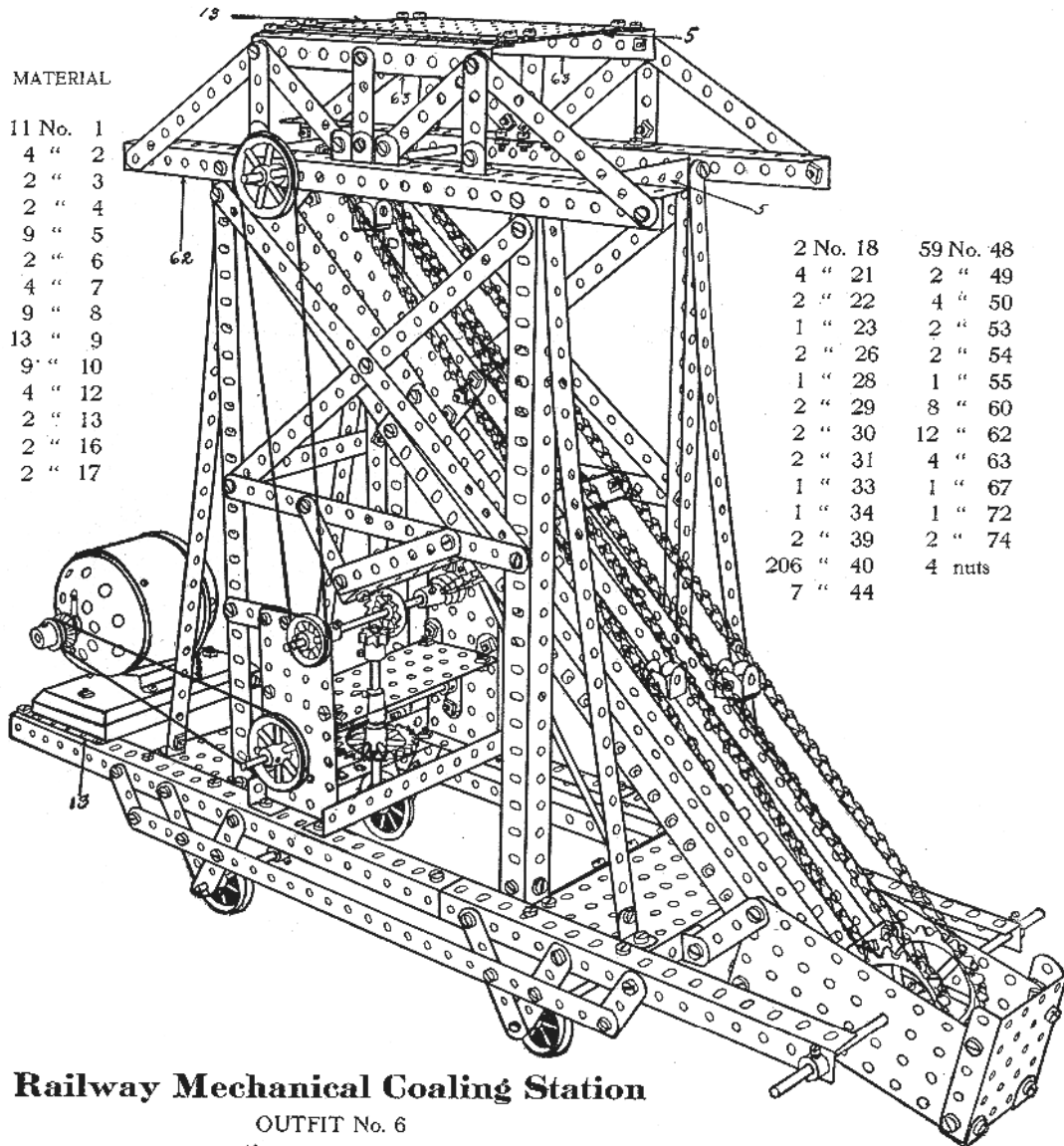


Trapeze

# MATERIAL

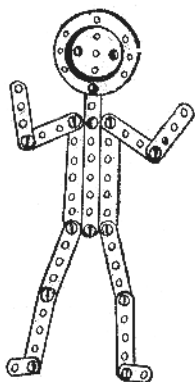
11 No.	1
4 "	2
2 "	3
2 "	4
9 "	5
2 "	6
4 "	7
9 "	8
13 "	9
9 "	10
4 "	12
2 "	13
2 "	16
2 "	17

2 No.	18	59 No.	48
4 "	21	2 "	49
2 "	22	4 "	50
1 "	23	2 "	53
2 "	26	2 "	54
1 "	28	1 "	55
2 "	29	8 "	60
2 "	30	12 "	62
2 "	31	4 "	63
1 "	33	1 "	67
1 "	34	1 "	72
2 "	39	2 "	74
206 "	40	4 "	nuts
7 "	44		



Railway Mechanical Coaling Station

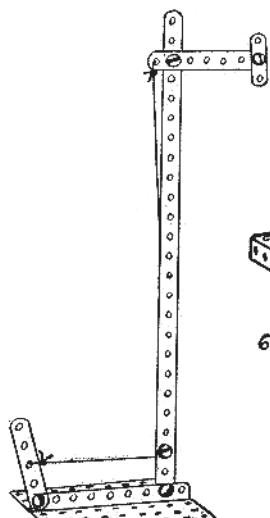
OUTFIT No. 6



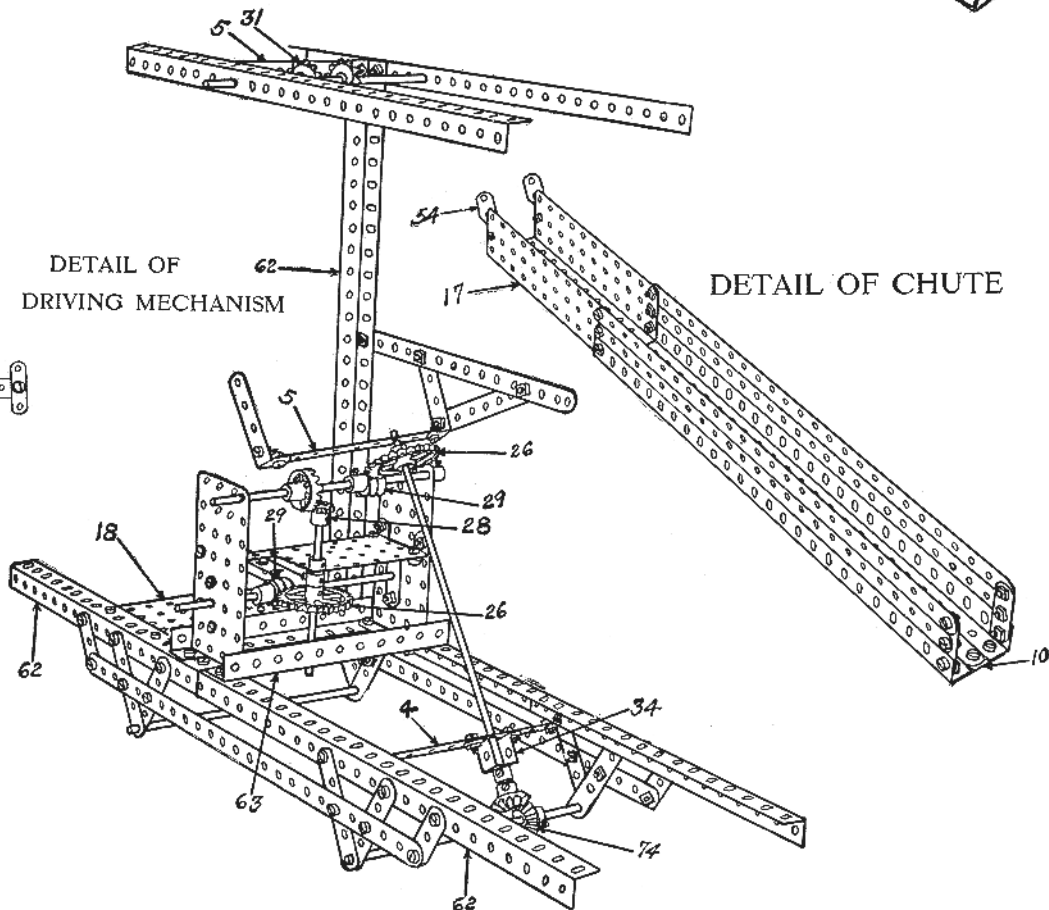
Structo Man

DETAIL OF  
DRIVING MECHANISM

DETAIL OF CHUTE



Semaphore



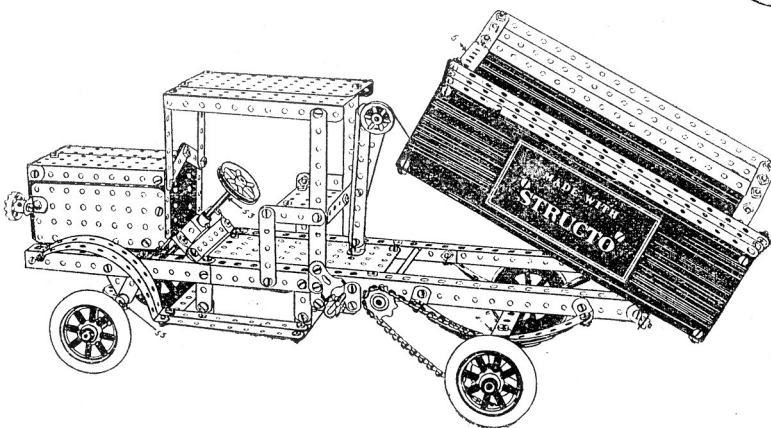
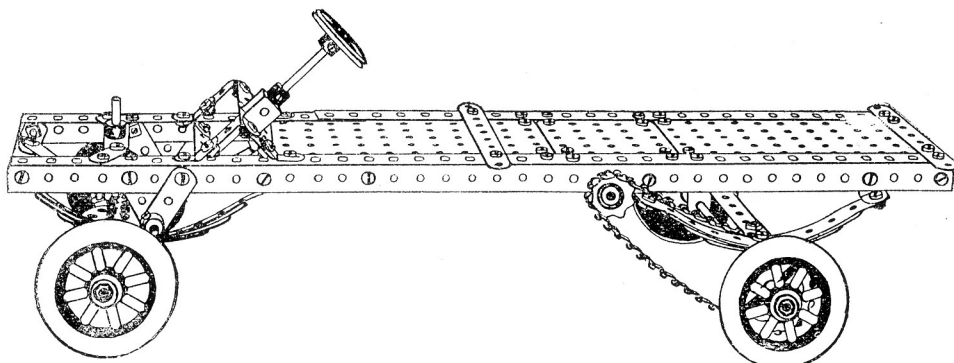


before, and A/Gs 7 & 10¢ against 5 & 7¢. A new feature in this Manual is that the manuals available were listed. The Cadet & Engineering match those described here in having 24 & 40 pages, and costing 15¢ each. The general manual, still 25¢, has 104 pages & more than 200 models, so it has fewer pages than the 536. 8 page Auto Instruction Sheets for the No.10 & 12 Auto Builders were also listed at 15¢.

Only 6 of the 24 pages in the Manual are given over to **models** – a good selection of 70, but all of a very simple nature, & the 8 on the previous 2 pages are typical. No inventory for the Set is given but the main parts, apart from the 2½" Discs, and a selection of Strips (including 2x 25h), are 2x 9"3h Single Flanged Plates.

**1919** Only pp9-96 remain of the final manual, date uncertain, but I'll call it the '**1919**' manual. That ought to mean 104 pages in all, and that would agree with the one listed in the '539/Cadet' manual, but the staples show at p50. Perhaps some extra pages were added at the end in some way. The number of models claimed in the ads for Sets 1-5 have increase from 41,69,94,114,127 to 60,87,111,143,162. The numbers in this Manual don't entirely agree with the new claim

even if the 'mechanisms' included are taken into account, but discrepancies, albeit rather smaller, were found in earlier manuals. The items advertised in the remaining pages are the sets as before, but with no prices for any of them, the 2 lengths of M-U Girder, and a new item, the Auto Wheels set, left, at \$1. It contained 4 Road Wheels, 'in cast metal ..... finished in two-color enamel', & presumably they are the ones used in the Auto sets. They scale at about 2½" Ø, a great



improvement on the standard 1½" Wagon Wheel, but from the model above, used to illustrates the use of the new Wheels, still none too big.

The **models** are mostly those from the previous manual, with a few dropped and the new ones 'more of the same'.

**1920** As mentioned in OSN 15 production ceased at the

end of 1919. An undated form letter from the Meccano Company, New York reads: 'Your enquiry has been referred to us by the Structo Mfg. Co., who have discontinued the manufacture of Structo steel building outfits. You will find enclosed a copy of 'Meccano Land' and a price list ...'. Based on the highest PN shown the latter is from 1920.

**The PARTS** The following notes supplement those in 15/424, and the additional information in 16/458-9, 18/523, 21/618, & 28/814. They are based on a No.2 set with nickel parts; most of what was probably a No.5, with the usual tinned parts, now mostly dark grey; and all of a Power Plant except the Transformer, again with tinned parts. For simplicity I'll refer to the No.2 parts as 'early', and the others as 'late'. The sample is too small to be sure that the differences noted between the two periods (including those for the cast Wheels as well) are entirely typical.

**The Basics** • **Holes** are generally larger in the early parts, 4.4mm mostly, against 4.2-4.3mm for the late ones. • The only early **slot** seen is 7.0\*4.7mm in the A/B; the equivalent late slot varies from 7.3\*4.7 to 7.7\*4.3mm. The slot in the late A/G is 4.7\*7.6mm (as in 16/459) but it is 4.3\*7.9mm in the M-U Girder. • The bore of all the **bosses** is 4.2mm and all are double-tapped 6-32. All also have a slight taper outwards from the root – very little, 10.0 to 9.9mm, over a typical length of 8mm, on the early parts, but more on the late ones. Those comparable to the early ones are 10.4 to 9.8mm over about the same length, but many of the others have slightly longer bosses, say 9mm, and the taper is 10.6 to 10.0mm. The amount the bosses protrude from the front face varies from zero on the Bush Wheels (but note 18/523) to 3mm on some parts. • **Axles** etc are nearly all 4.10mm Ø but a few are slightly larger for both periods, with up to 4.15mm for the late ones. • **Strips** & **Brackets** have large radius **ends** with typically 2½-4mm of metal outside the end holes. **Corners** are square on Girders but fully rounded on Plates.

• Most **Strips** are 12.7mm wide but some of the late ones, longer than 11h, are up to 13.0mm. • Late **A/Gs** are about 15\*15mm in section with 4½mm of metal outside the round holes and 3½mm outside the slots. • **A/Bs** have about 9mm of metal between their hole & slot, but the bend point and metal outside the hole & slot vary considerably. • None of the **Wheels** are painted and the **Wagon Wheels** (see 16/458) have 8 spokes, and a tread 4.8mm wide. The **Car Wheel** & **Bush Wheel** are 1½" o.d. The early ½" **Pulley** is nickel plated steel and so is one of the late ones, but a second is chemically black-

ened. • The **Collar** is cast, 9.7mm Ø, about 7mm long, and double-tapped. • The **N&B** are 8-32 and are nicked steel. The pressed square **Nut** is 6.4mm A/F & 2½mm thick. The **Bolt** has a fillister head of about 6.8mm Ø and is 7mm u/h, though a few in the late set are 10mm u/h. The early Bolts have heads well over 3mm deep while the late ones are only a little over 2mm. The 6-32 **Set Screw**, again nicked steel, has a tiny 4mm Ø fillister head. • The **Spanner** is 70mm long and 1.7mm thick. The **Screwdriver** seen in 3 Ebay sets looks like the MCS one and scales at 4¾" long – 2 have black handles while one in red. The part in the early set, at the top of the next column, is 4¼" o/a and its red handle has no flats. • The early nickel **Hook** is 27mm long o/a, and is made of 2.1mm wire.

Except where stated the rest of the parts are from the late period. • The **Coupling** is similar to the Collar but is 20mm long o/a, and the tappings are at ½" centres. • The **Gear Rack** is pressed from thin, .75mm thick, steel, and is 3½" long. • The **Sprocket Chain** is nickel plated steel and fully stretched, has a pitch of .3" (23 links over 7.0" – it seems to be a good fit on the Sprockets, but I haven't tried running it yet. • The



**Engine Crank** is 5½" long with a ½" offset. • The **Hanger for Shafting** (from the Power Plant) is a steel casting painted red, with the holes at the top at 1" pitch and the base holes at 2". Its back face is completely flat. • The **Coil Spring** is black, 1¾" long excluding the end loops, and 6½mm Ø. • The **Car Wheel Bracket** hasn't been seen and though there are 4 of them in Set 5 and 8 in Set 6, none are used in any of the manual models. In the Illustrated Parts it looks like a 1\*2h A/B with an outward joggle before the end hole in the longer arm. Its photo is shown above on the right, together with 3 of actual parts, the **Rack Guide**, the **Clevis**, & the **Pawl**. The Rack Guide is 1⅞" wide and the Rack runs between the back and the folded over semi-circular lip. The Clevis is like a formed M102. I'm not sure why the centre of the Pawl is pressed through, perhaps as an aid to moving it but using one of the lugs might be easier.

The **Motor** from the Power Plant is perhaps the No.0 mentioned earlier as it has simple screw terminals (one on each sideplate) and no on/off or reversing switch. The sideplates are painted red, & are stamped **STRUCTO** in an arc near the bottom. The strips bolted across the top of the sideplates have a rectangular slot between the outer & centre holes on each side, & the brush holders are riveted through those in the rear strip. The holes in the mounting flanges are at 2" pitch.

**MANUAL SUMMARIES** Details identical to those in the previous summary are not repeated.

**'32pp Photo' Manual** •Name: **STRUCTO** •Details of maker: Structo Manufacturing Co., Freeport, Illinois, U.S.A. •No dates or Ref Nos. •Page size: 254\*169mm. •No. of pages: 32+covers. •Language: English. •Printing: cover shown earlier, photos of models, etc. •Page Nos. of Parts List & highest PN: 29,64 (Illustrated Parts on p30). •Page Nos. of Set Contents & highest PN: 31,64. •Sets covered: 1-6. •No. of models for each set: 12,2,5,5,4,4. •Name, Page No. of first & last model of each set (no Model Nos.): 1: Camp Stool,2; Small Derrick,5. 2: Express Wagon,5; Windmill,6. 3: Freight Truck,6; Monoplane,9. 4: Hand Car,8; Railway Derrick,14. 5: Biplane,9; Observation Tower,20. 6: Derrick with Walking Beam Engine,15; Machine Shop,22. •Other notes: Models are not all in Set order. Non-outfit models on pp13,16-18,23. Intro on pp1,24; Using Parts 25-27; ads 28,32,C3. C2,4 blank.

**'40pp Photo' Manual** •No. of pages: 40+covers. •Printing: as before except '91394' after 'TRADE MARK' on cover. •Page Nos. of Parts List & highest PN: 36,65 (Illustrated Parts on p37). •Page Nos. of Set Contents & highest PN: 38,64. •No. of models for each set: 13,5,10,6,5,4. •Name, Page No. of first & last model of each set (no Model Nos.): 1: Camp Stool,2; Small Derrick,6. 2: Swing,5; Derrick,8. 3: Freight Truck,7; Rail Road Velocipede,18. 4: Hand Car,12; Railway Derrick,19. 5: Biplane,13; Traveling Crane,26. 6: Large Windmill,18; Machine Shop,28. •Other notes: Models are not all in Set order. Non-outfit models on pp20-22,29,40. Intro on pp1,24; Using Parts 31-34; ads 35,39,C3. C2,4 blank. Details from B&W photocopy.

**pp13-52 of the '60pp Photo' Manual** •No. of pages: probably 60+covers. •Printing: cover not seen, photos of models, etc. •Parts List, Set Contents, etc probably on missing pages. •Sets covered: 1-6. •No. of models for each set: ?,>1,16,10,7,8. •Name, Page No. of first & last model of each set (no Model Nos.): 1: ?;?, ?;?. 2: ?;?, ?;?. 3: Freight Truck,13; Steam Shovel,20. 4: Hand Car,21; Street Car,27. 5: Biplane,27; Traveling Crane,35. 6: Large Windmill,36; Electric Locomotive,44. •Other notes: Models are in Set order. Non-outfit model on pp30-32. Intro on pp1,24; Using Parts on p47- at least 52.

**'1<sup>st</sup> 1916' Manual** This is the very similar to the '2<sup>nd</sup> 1916' manual below except that that none of the prices have been increased.

**'2<sup>nd</sup> 1916' Manual** This is the same as the 'FORM 536' Manual below except that: (i) It doesn't have FORM 536 on the cover. (ii) There are 2

extra pages of No.5 models after p70, with R. R. Telegraph Repair Car on p71, & Merry-Go-Round on p72. The last model is the Hall Clock on pp101-103 (after the Hall Clock the '536' has Automatic Punch Press on p102). So compared to the '536' all model page numbers after 72 are increased by 2. Both manuals have 112 pages and the extra advertising page in the 536 features the new M-U Girder & Engineering sets. (iii) Rubber stamps have been used to obliterate the price of some sets and put the increased price put alongside. In the 536 these new prices are properly printed.

**'Engineering' Manual** •No. of pages: 40+covers. •Printing: cover shown earlier, line drgs of models. •Page Nos. of Illustrated Parts List & highest PN: 34-37,100. •No Set Contents. •Sets covered: Junior Engineer, Structo Engineer, Chief Engineer. •No. of models for each set: 7,10,8. •Name, Page No. of first & last model of each set (no Model Nos.): Junior: Triumphal Arch,6; Lawn Swing,10. Structo: Builder's Hoist,11; Dutch Windmill,19. Chief: Ferry Bridge,20; Hall Clock,27-29. •Other notes: Intro on p1; using parts pp3,5; ads pp2,4, 31-33,38-40. C2-4 not seen but probably blank. Details from photocopy.

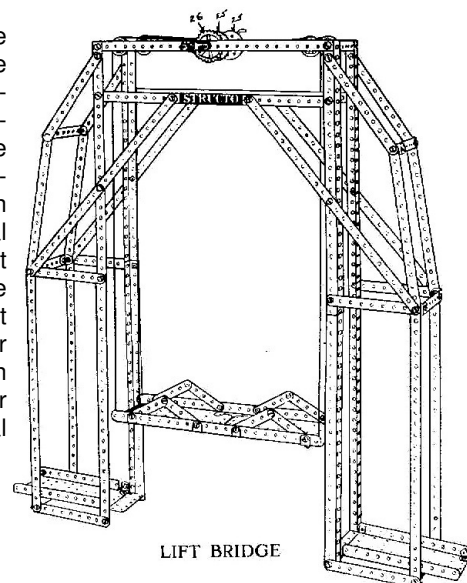
**'Form 536' Manual** •No. of pages: 112+ covers. •Printing: cover as described earlier, line drgs of virtually all models. •Page Nos. of Illustrated Parts List & highest PN: 3-6,100. •Page Nos. of Set Contents & highest PN: 112,75. •Sets covered: 1-6. •No. of models for each set: 41,27,25,22,10,20. •Name, Page No. of first & last model of each set (no Model Nos.): 1: Small Chair,8; Farm Wagon,21. 2: Auto Truck,22; Power Hack Saw,34. 3: Geared Punch Press,35; Gasoline Engine,47. 4: Doll Cradle,48; Swinging Circular Gang Saw,64. 5: Suspension Bridge,66; Battleship,74. 6: Engine Lathe,75; Automatic Punch Press,102. •Other notes: A 2-d Picture, The Midnight Ride, is on p57 & mechanisms on pp53,59,64,68,71,78,85,90, 95. Intro on pp1,2; Using Parts p7 & Gears pp35,44,48,65; ads pp103-111. C2-4 blank. Details from photocopy.

**'Form 536\*' Manual** This is the 1917 Form 536 manual above except that the pages 107 onwards have been cut out and 2 new pages glued to the 2<sup>nd</sup> & 3<sup>rd</sup> of the 3 resulting stubs. They have ads on pp107-8 for the Cadet and 1-4 outfits, and on pp109-110 for the 5 & 6 outfits; the Engineering outfits; and the M-U Girder. Hence no mention is made of the linking sets or the set contents.

**'Form 539 Cadet' Manual** •Ref No. FORM 539 on C1. •No. of pages: 24+covers. •Printing: cover shown earlier, line drgs of models. •Page Nos. of Illustrated Parts List & highest PN: 18-21,100. •No Set Contents. •Set covered: Cadet. •No. of models: 70. •Name, Page No. of first & last model (no Model Nos.): Factory Truck,3; Push Wagon,8. •Other notes: Intro on p1, using parts p2, ad for manuals p9, other ads pp 10-17, 22-24, including Auto-Builder on pp14,15,24. C2,3 blank; C4 has Toy Mfrs U.S.A. logo. Details from photocopy.

**pp9-95 of the '1919' Manual** •No. of pages: between 100 & 104 + covers. •Printing: cover not seen, line drgs of model, etc. •Parts List, Set Contents, etc are no doubt on the missing pages. •Sets covered: 1-6. •No. of models for each set: >25,27,26,28,15,21. •Name, Page No. of first & last model of each set (no Model Nos.): 1: ?;?, ?;?. 2: Auto Truck,14; Police Patrol Wagon,22. 3: Coal Dump Wagon,23; Freight Truck,34. 4: Concrete Mixer,35; Sewing Machine,49. 5: Roadster,55; Ship Crane,66. 6: Mowing Machine,67; The Hall Clock, 88-90. •Other notes: Ads on pp92-96. Details are from photocopies of 'key' pages.

A little space remains, so on the right the illustration, a little reduced in size, of one of the more original new models in the '1919' manual above. It is for Set 4 & though quite elegant looking, it has no guides for the lifting span and may be rather lacking in lateral bracing.





**EDITORIAL** All I have to say this time is to point out that on some of the OSN 32 pages the Issue No. before the Page No. was incorrect, with '31' and even '30' instead of '32'. The pages in question were 950, 959, 960, 964, 965, & 970. Sorry about that.

## Shorter NOTES, with thanks to all contributors.

1. David Hobson showed me his Type 1 **MERCATOR** (see 29/848) No.3 set. The red box is 307\*405\*25mm with a portrait label like the one in OSN 29, pasted lengthways onto the lid, and a No.3 sticker on the lid apron. The parts were obviously the remains of more than a No.3 (they weighed nearly twice as much as the weight given for the set in the Manual) and the green parts were in both the dark & medium shades mentioned in OSN 29. Nearly all the parts described in OSN 29 were present with only minor differences. Points of interest follow. • Some of the 10.5mm Ø **bosses** were 11.0mm, and vice-versa. The peening had the 4 indents in most cases but in a few instances it was very shallow with no indents. • The **18mm Pulley** (see also 30/876A) was double-tapped but with a different thread on each side. Neither could be recognised but the bores were 2.55 & 2.75mm – if 'DIY' it was neatly done. • The **N&B** were all the brass sort. • The slots in the **A/B** were 7.7 & 7.9mm long o/a. • The **Loose Pulley #109** was as in OSN 29 (it was not mentioned there that it is nickel plated) but its **Rubber Ring** was smaller, 4½mm wide & 36½mm o.d. • The 6 **Collars** were 10.0-10.7mm wide and one was double-tapped. • The **Spring Clip #210** was bright steel, 3mm wide with 4½mm long wings. • The **Spanner** was 98mm long o/a, cranked as in OSN 29 but with both ends angled (as illustrated in OSN 29 – the 'straight end' mentioned there was probably an error). • The **Crank Handles** were 102, 109, & 145mm long o/a. • A **small parts box** in the Set was red steel, 58\*37\*21mm, with a 38\*20mm clear celluloid panel in the lid.

The **Manual** was identical to the one in OSN 29 except that the address of the Bureaux was 73 rue Pierre Decoster, Forest-Bruxelles, and the address of the Usines (works) is also given – 97B rue de Fierlant, Forest-Bruxelles.

A **TRIX**-type dc **Motor** (as Fig.1 in 4/52) with a black painted base was in David's set but the only reference to a motor in the known **MERCATOR** literature is that 2 of the 'Supermodels' on C4 of the Manual are said to be powered by a 'moteur puissant (powerful)'.

### MERCATOR: S7

[33/972]

2. Don Redmond wrote that while 3 of his **STRUCTO** Spider (Bush) Wheels are flush on the face side (as were the parts noted in 15/424) the fourth has a boss projecting out about 3mm. All of course are cast parts.

### STRUCTO: S13

[33/972]

3. Don also mentioned the **1914 handed ERECTOR 12" Girders**, see 32/940, and wondered if those in the set on p51 in *Greenberg* had been packed upside down, thus making them appear to be the opposite hand to the norm.

### ERECTOR [2]: S2

[33/972]

4. Orion DreamDancer has just bought the new, enlarged versions of the **METALLUS** Berlin, the largest standard set, and the Archimedes gear set. He finds them very impressive and he is also impressed with the factory who rapidly replaced some missing/unsatisfactory parts. The only manuals supplied are the old **TEMSI** ones which were of

course for much smaller outfits, but the set contents allow models from the old **MÄRKLIN** manuals to be made. In doing so Orion has had to resort to **MÄRKLIN** & **MECCANO** parts on some occasions though, and he mentioned 3 cases: short Grub Screws, Thin Washers, and the Reversed A/B which has a 5/8" long centre portion in the **METALLUS** version.

### METALLUS: S2

[33/972]

5. **Snippet – A KUKO Lid** The name **KUKO** was mentioned in 20/587, and the lid below, from Ebay, is all I have on it. As can be seen the maker is the East German **VEB Ankerwerk** of Schmalkalen, a town 45km southwest of Erfurt. Presumably the parts are metal, & certainly, from the Screwdriver &

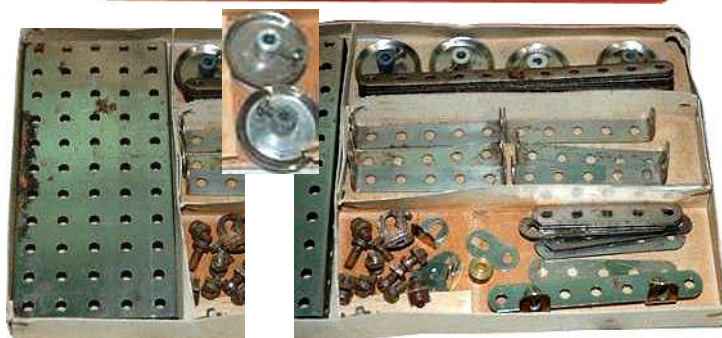


Spanner in the picture, they are joined with **N&B**. The date given in the Ebay announcement was late 1950s.

### KUKO: S1

[33/972]

6. **Snippet – 'New' System: MILO** Two identical boxes of this simple system, German presumably, were offered as one lot and the lid is shown below. The contents varied a little



between them and above the left & right ends of the one that looked the most representative, with inset between a slightly