21

# OTHER SYSTEMS NEWSLETTER

OSN 21 OCTOBER 1999

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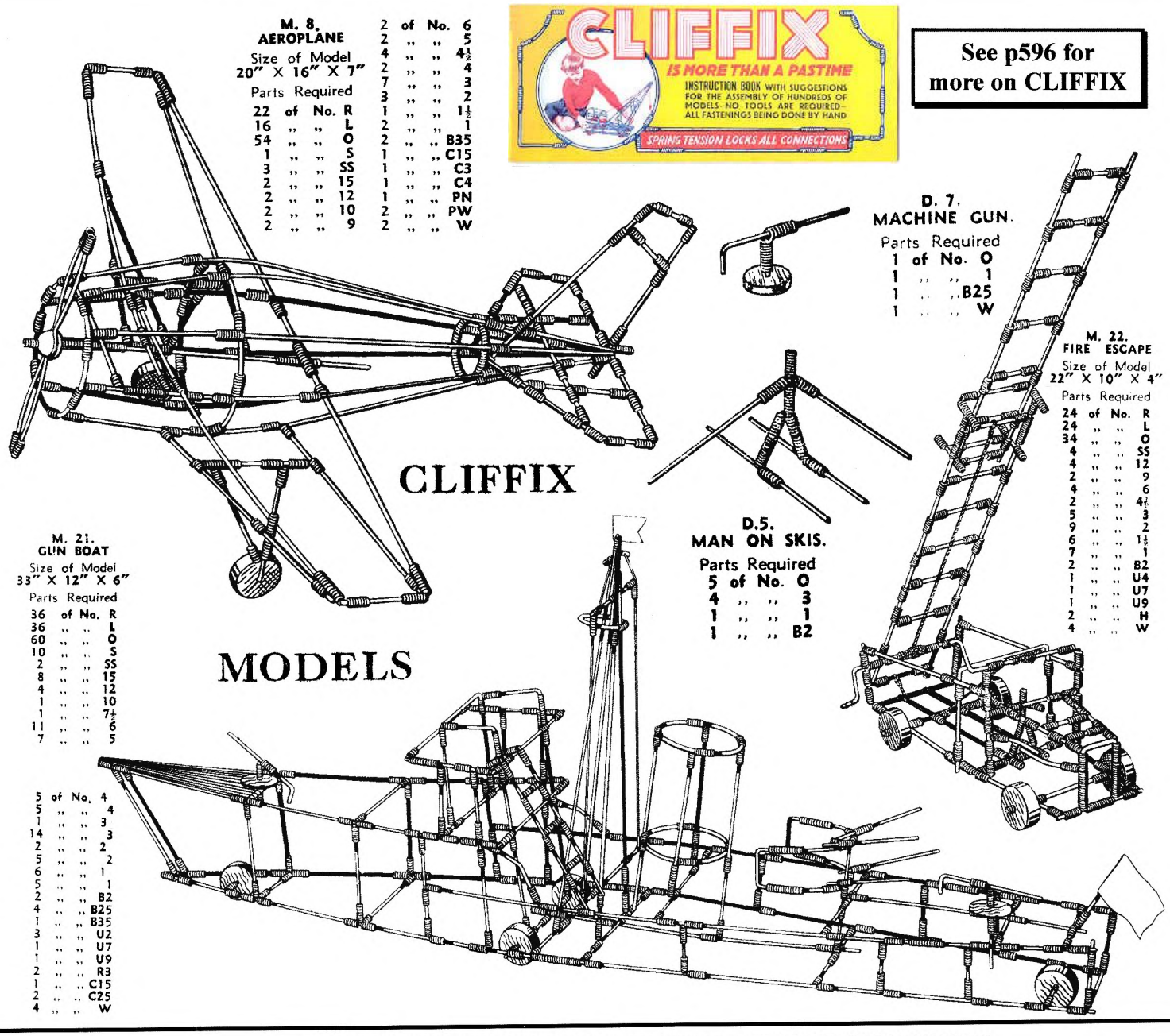
**EDITORIAL** I've long wanted to have some colour in OSN but it would be too complicated, and too expensive, to print it thus. As the next best thing there is now an OSN web site, www.OSNL.freeserve.co.uk, which carries colour versions of some OSN B&W illustrations, and more will be added from time to time. The idea is that they can be down loaded, cut out, & pasted over existing pictures. They do brighten the pages and in some cases more detail can be seen. The web pages are laid out within A4/US Letter size using an 800*600 screen. With my printer coated paper gives a worthwhile improvement in quality. Browsers etc are not all of the same mind, and details of any problems that arise (with solutions if possible) would be welcome. Ready printed pages are available, please see p619 for details.

Please note the new price structure of MCS Extra Sheets, also on p619. Orders in advance for all new ones are not affected, but for all other purchases the price per Sheet will be 20p starting next January 1st. The increase is because my stocks of back issues are virtually exhausted and another large batch would be the proverbial straw for my limited storage space.

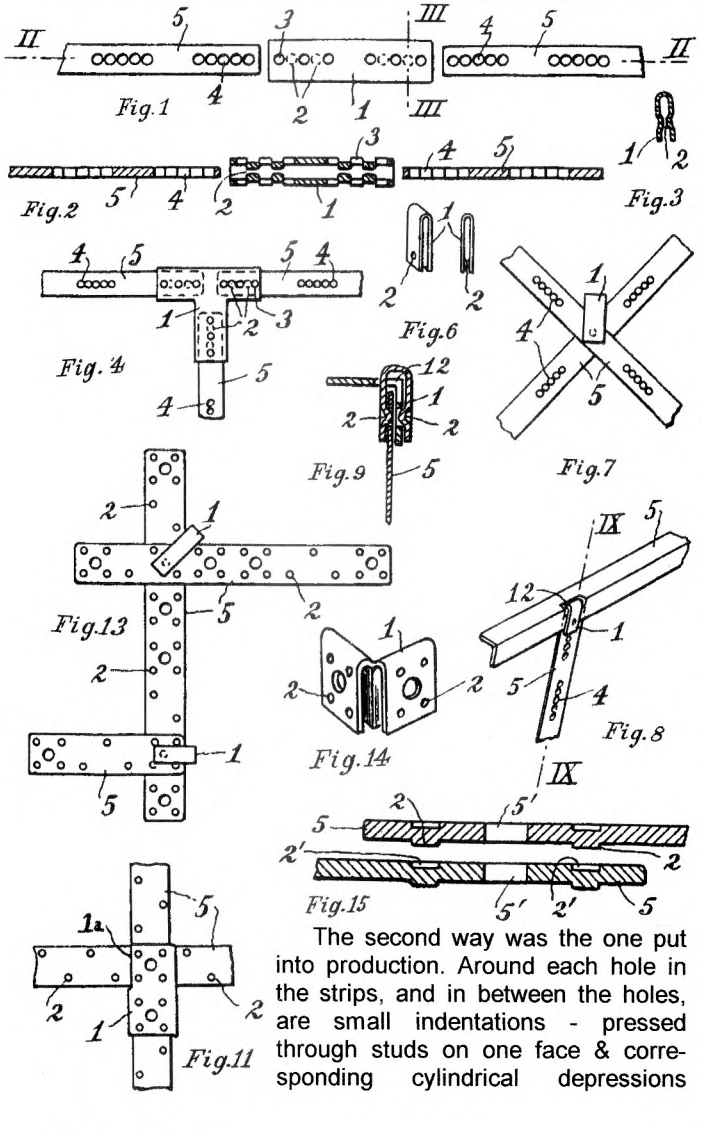


**STANDARD L.R.** This French system, patented in 1933, was produced until the mid to late 1950s, with a gap between 1940 & 1946. It had a number of unusual features and is said to have been the 4th most popular constructional toy in France, though well behind MECCANO, TRIX, & CONSTRUCTOR. These notes are based on a selection of parts from Jeannot Buteux/Constructorama; a manual, thought to be from 1935, on loan from Roger Baker; a copy of a 1937 catalogue from David Hobson; and some sets & manuals, probably from 1947, borrowed from David. I've also drawn on an article by Jeannot & 'A.L.' in the French CAM magazine No.49. Thank you to all.

In the CAM article it is explained that the initials L.R. are those of Louis Roussy, who founded the company (in rue Corvisart, Paris) that made STANDARD L.R., and also the better known 0-gauge electric trains, 'Le Rapide L.R.', the fastest of their day. He died in 1957.

**The PATENT** The UK patent, No.434802, was applied for in Feb. 1934, following the French patent (750012) of Feb.3, 1933. It was in the names of Louis Roussy, a Swiss citizen with a Paris address, & René Trubert of Viroflay (Seine-et-Oise), formerly of Arras, Pas de Calais. The new idea was to have strips and other parts which would engage positively with one another, and be held together with a U-shaped spring clips instead of N&B.

Two different schemes were described. In the first strips are shown joined (Figs.1,2 below) by a springy connecting clip, 1, a section of which is shown in Fig.3. The connecting element could be a right angle or, as in Fig.4, a 'T'. Strips could also be held by narrow clip (Figs.6,7), and Figs.8,9 show how a strip could be held to an angle girder with a suitable slot in it, by the same type of clip. None of these schemes were included in L.R., quite rightly I should think.

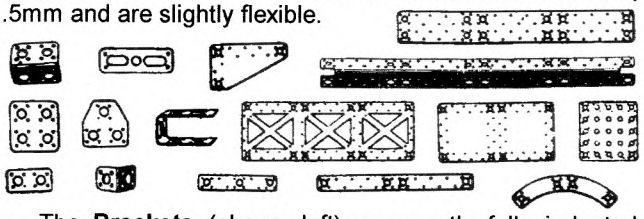



The second way was the one put into production. Around each hole in the strips, and in between the holes, are small indentations - pressed through studs on one face & corresponding cylindrical depressions (hollows) in the other (Figs.13,15). As in Fig.15 the parts could be joined with the studs engaging the hollows, giving positive location. The **Clips** actually used are shaped as shown to the right. Two other clips are shown (Figs.11,14) but were not introduced. In both schemes it was recognised that N&B could be used as well as the clips, to provide 'proof against any forces tending to displace the members angularly'.

**The PARTS** • DATA (in mm) STRIP (4-hole, 10cm long): •hole pitch/dia, 10.0 & 40.0/4.1; •width, 10.1; thickness, .80; •2½mm radii corners. BOSS: •o/d, 10.0 but see below; •i/d, 4.03; •nickeled brass; •generally double-tapped. THREAD: 5/32" BSW. AXLE DIA: 3.96. DP: 38. NUT: hex 6.0 A/F; BOLT: cheesehead 5.5 Ø; both nickeled brass.

In all there were 80 parts and they are fairly well shown in MCS. A general description and some notes follow, based on the parts in the Sets, with asides to record known variations in design, materials, etc.

• The **main parts** are Strips, Double (width) Strips, A/Gs, Plates, & Braced Girders, and examples are shown below, right. The lengths of the parts are in multiples of 5cm, up to 25cm in some cases, and the Plates & B/Gs are 5cm wide. The holes at either end of each 5cm 'unit' are 40mm apart, and so the adjacent holes in a pair of units are at 10mm pitch. The indentations are about 1½mm Ø and each hole has 4 around it, with the same scheme between the holes but with every other one omitted giving a triangular pattern. This should be clear from the illustrations although the indentations may not show on the dark side of the A/G. The B/Gs have 1.6mm holes instead of the indentations, so they don't lock together, and instead of the V-pattern above, all possible positions are pierced. In addition to the 'end/corner' holes, the 5cm Strip & 5cm Plate have a centre hole; and all the B/Gs have centre holes along the top & bottom, plus a hole at each intersection of the diagonal bracing, (not shown in the illustration below). There's also a 5cm$^2$, 5*5h Perf. Plate with no indentations around the inner 3*3 holes. The Plates are rigid, .9mm thick, the same as the longer Strips; some B/Gs are nearly as thick but others are only .5mm and are slightly flexible.



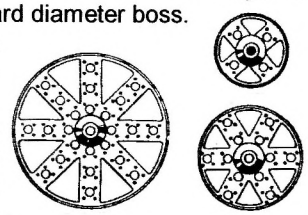
• The **Brackets** (above, left) are mostly fully indented. One version of the Angle Bracket has the studs on the outside and another has them on the inside. There are also 2 versions of the Triangular Plate with the studs on opposite sides. The 3h Flat Bracket (#32) has the only slotted holes in the system, and has indentations only outside them.

• **Finish**. In the Sets the parts are nearly all either steel, treated in some way to give (now) a patchy, dull grey appearance, or painted light blue. The latter are all Strips longer than 10cm, all Double Strips, A/Gs, & Plates, including the Triangular Plates. The only exceptions are the red Hook, and aluminium Collar, Coupling, & 12mm Pulley. Brass parts (bosses & most Gears) have the same dull appearance as the steel ones. Over the years many other finishes were used including polished steel, nickel & brass plating, and paint in red, dark blue (sometimes over light blue), dark green (very rare), silver, & gold. Parts made of natural aluminium are also known, and some have shallow impressed grooves, perhaps to stiffen them. In the case of one 5cm Plate these are 3 concentric circles around the centre hole, with the largest some 4cm Ø. It is not known in what order the different finishes appeared; in the models in the prewar Manual the steel & red parts above, plus all the Strips, are in B&W, while the others are coloured light blue.

• In the Sets the 12mm **Pulley** is aluminium and the 20mm ones, fast & loose, are steel. All are machined from

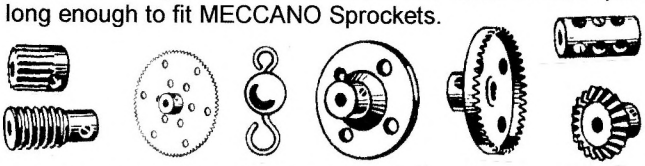
the solid, and the boss of the 20mm is 9.8mm Ø. Other examples of these three Pulleys are nickeled brass with the standard diameter boss.

The **Wheels**, 35, 50 & 75mm Ø, have deeply recessed centres and flanges about 5mm wide. Two back to back give a small pulley groove at the join. Around all but the inner holes are 2 indentations & 2 small holes, diagonally opposite in each case. Why the holes? The inner holes have only an indentation & a small hole outboard, with no room for the inboard pair because of the recess.

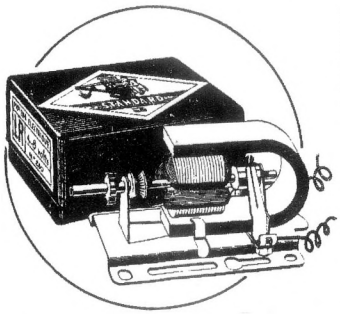


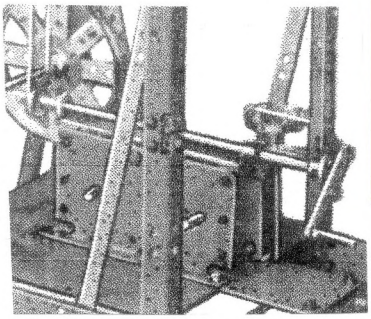
The black rubber **Tyres** fit between pairs of the 35 & 50mm Wheels. The 50mm size is about 76mm o.d. and has No.97 & STANDARD L.R. moulded into both walls.

- The DP of the spur gears is 38, as in MECCANO, and there is a 15t **Pinion** which runs with 45, 75 & 105t **Gears** at 20, 30 & 40mm centres. The faces of the Gears have holes which match those in the Wheels, but without the small holes & indentations. The boss of the 105t Gear is 15.0mm Ø. All the gears except the 45 & 105t Gears are shown below. The **Worm** is 23mm o/a, with an 8.5mm Ø single-tapped boss. The **Bevel** has 20 teeth and is 21mm o.d. The 45t **Contrate** is 31mm Ø and the outside corner is square. The Pinion & Contrate in the Set are nickel plated, and so is another 45t Gear to hand. The **Chain** has links which span 2 teeth of the Gears; it is slightly narrower than M94 and though the pitch is about the same it isn't quite long enough to fit MECCANO Sprockets.

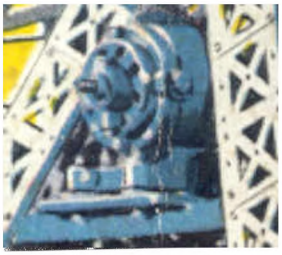


- The steel **Bush Wheel** (#89), above, is 30mm Ø and the single-tapped brass boss is riveted to the deeply recessed centre. The 7mm long **Collar** and 20mm long **Coupling** (above) in the Sets are aluminium, but other known Collars are nickeled brass, double-tapped. The cross holes in the Coupling are like M63 but are at 5mm pitch, which leaves very little metal between them.
- **N&B** are machined and the Bolts have undercut heads. Some Nuts in the Sets are plain brass. The **Washer** to hand is nickeled steel, 8mm Ø. The **Spring Clips** seen are black: the short type 3.2mm wide & 11mm long o/a, and the longer one 2.0mm wide by 14mm o/a. The **Span'driver** is 70mm o/a and is stamped STANDARD L.R.
- **Threaded Rods** are steel with ends either flat, or machined into a slight dome. **Axles** have sheared ends, rounded off a little. The **Crank Handle** is 125mm o/a with an 85mm shaft and slightly angled bends.
- The **Cord** is mid to dark blue, The **Hook** (above) is 33mm long o/a with a 10mm cast ball, a very small wire eye, and a very large wire hook.
- **Motors** The rather TRIX-like 4-8v Motor below is from





the 1937 catalogue. It was advertised in the 1935 manual, and is shown in a few of the manual models. A Spring Motor (MOTEUR MECANIQUE) (above) is included in the title of the No.6 Crane in the 1935 manual and can just be seen in the base of the model. The model is in MCS but the Motor can't be distinguished in my copy. A large electric motor (right) is shown in the Ferris Wheel supermodel on the cover of the 1935 manual. Again it is in MCS and can just be seen between the top of the outer, side Girders. An electric motor with built in reduction gearing is mentioned in the CAM article.



- **Stamped parts**. STANDARD L.R. is on the Spanner and the face of a 45t Gear; the appropriate side of the Gears in the Sets can't be seen.
- The parts are all accurately made and generally well finished. There is very little play when the indentations of 2 parts are engaged.
- **Parts not seen**: Box Spanner, Screwdriver,  75t Gear, Spring Cord, 35mm Tyre, Hinge (above), & #99, Chenille. All but the Hinge are parts not included in any of the sets through No.4. No illustration of the Chenille is available and the most likely dictionary meaning is Caterpillar Track. It was listed in the 1937 catalogue but not the 1935 manual.
- Some **early parts** with no indentations are mentioned in the CAM article. They are of thicker than normal steel with a granular look.

**The SETS** The outfits to hand are a No.0 and the conversion sets 0C, 1C, & 3C. The No.0 and two of the others have 9/47 in pencil on the lid, under the price, 400[f] for the No.0. None have any Spring Clips (an important part of the system) in them, and in one is a small flyer explaining that their non-inclusion was due to the unavailability of suitable materials. (It is suggested that N&B be used instead, but in fact this would mean significant changes to many of the models, particularly the smaller ones, and I don't think any extra N&B were provided.) All the sets are in similar boxes, 25* 36*2cm, with the parts strung to light orange card. The arrangements of the parts is identical to the pictures in the 1937 catalogue except that there the N&B in some of the sets can be seen to be in a box or tin labelled STANDARD L.R., instead of transparent packets. The contents of the Sets correspond to those in 1935/1937. The lids are covered with the multi-coloured label below featuring an attractive looking 'giant' 3-engine Monoplane, made from light blue & steel parts. Only the top right corner of the lids, with 'L.R.' under 'STANDARD', is visible in the 1937 catalogue.


The range of sets varied over the years. In a 1934 ad for many types of constructional toys, only Sets 000, 000C (a conversion set), and No.00 are listed, but no doubt that wasn't the full range at the time. The 1935 manual has the Sets above under the heading 'SERIE JUNIOR', plus the standard range 0-4 and 0C to 3C. Also shown are a model from a No.5 outfit & one from a No.6, but no other mention

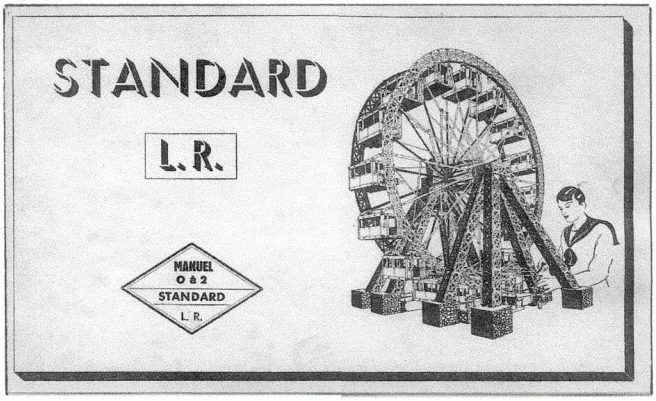
is made of these sets. The 1937 catalogue has all the '1935' outfits but no reference to outfits above No.4. 3 series of sets are listed in the CAM article: Nos.000-4 & 000C,0C-4C; 1-7 & 1C-6C; and 1S-6S. No details are given except small photos of Sets 1-7. The contents of Nos.3-7 look very like those of the 1935-47 Nos.0-4 and so perhaps Nos.1 & 2 were similar to the earlier 000 & 00. The one box lid shown is like the 1947 pattern, and at a guess the 1-7 series were a 'marketing exercise' in the 1950s.

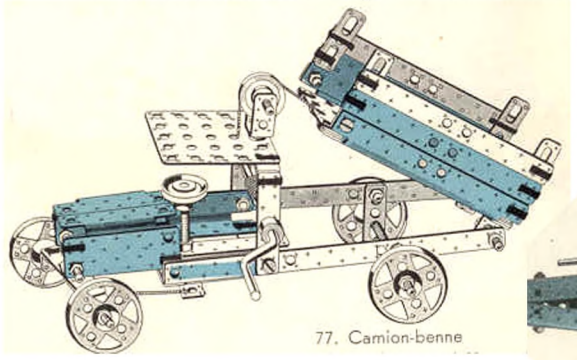
Returning to the known sets, the main parts in the No.0 are 12 Strips up to 15cm long, 4 Double Strips & 6 A/Gs up to 10cm long, 3 Plates 5*5cm, 17 Brackets, 22 Bolts & 29 Clips, 7 Threaded Rods, a Crank Handle, 2x 20mm Pulleys, 4x 35mm Wheels, & a Hook.

Quantities and the range of parts increase gradually until by Set 3 there are 38 Strips; 8 Double Strips; 12 A/Gs; 8 Plates; 8 Braced Girders; 52 Brackets; 98 Bolts & 99 Clips; 8 Threaded Rods & 4 Axles; 6 small Pulleys; 4 each of the 35 & 50mm Wheels, and 2 of 75mm Ø; and 2 Bush Wheels. There are also gears, for the first time: a Pinion, a Worm, 2x 45t Gears, and 1m of chain.

The additional parts in the No.4 include 2x 20mm Double Strips and 4 more 50mm Wheels, but are mainly types not in the No.3: a 105t Gear, 2 Bevels, a Contrate, 2 Couplings, & 4x 50mm Tyres.

**The Manuals & Models** First the 1935 0-4 manual, which has been dated from the '19-10-35' on the back cover. SUMMARY OF MANUAL •Name: STANDARD L.R. MANUEL 0 à 4. •Details of maker: none. •Dates &/or Ref Nos: 19-10-35 on IBC. •Page size: 324*193mm deep. •No. of pages: 80+covers. •Language: French. •Printing: line drgs of #0, & ½-tones of other models, with some parts light blue; cover (top right) full colour on yellow ground. •Page Nos. of Illustrated Parts List & Set Contents, & highest PN: 80-IBC. •Sets covered: 0,1,2,3,4. •No. of models for each set: 126,91,67,41,28. •Name, Model No., Page No. of first & last model of each set: 0: Porte-montre, 1,5; Disque pivotant,126,16. 1: Lustre,1.001,17; Voiture à chèvre, 0.091,32. 2: Crible,2.001,33; Rouleau de 7 tonnes,2.067,48. 3:Treuil de halage, 3.001,49; Pont roulant,3.041,64. 4: Châssis poids lourds, 4.001,65; Transborde,4.029,67. •Other notes: (i) Model 4.029 is out of place and otherwise the last model is Locomotive,4.028,78. (ii) An Index is on the IFC; pp1-4 give constructional details; p79 is an ad showing a No.5 & a No.6 model. (iii) On the BC an ad for the system,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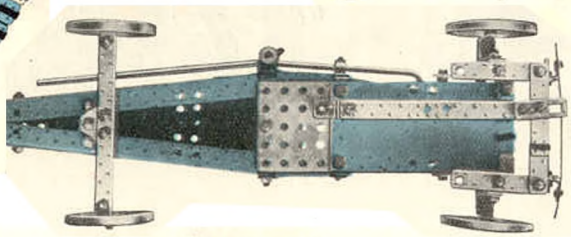

2.053.

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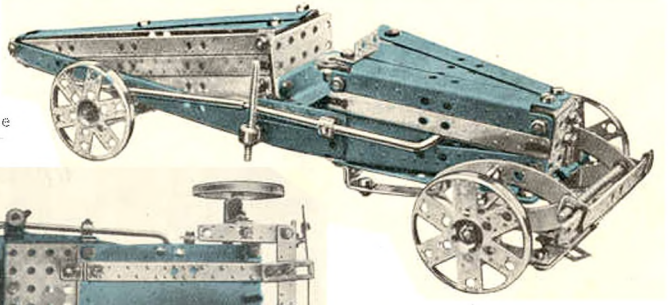

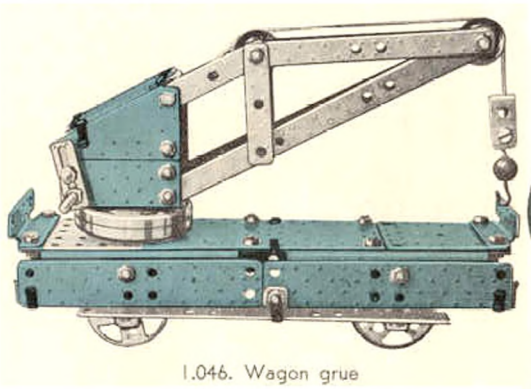
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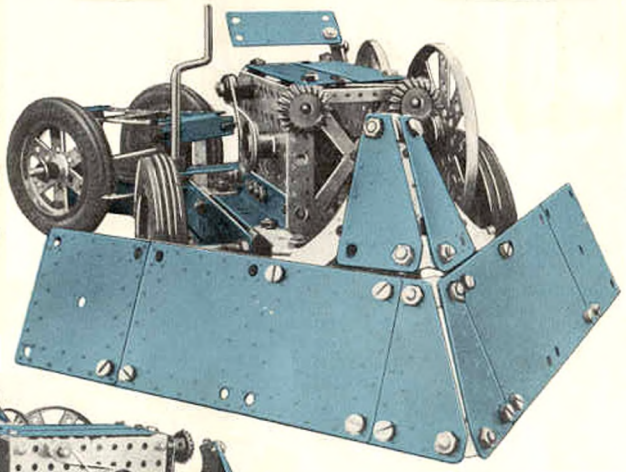

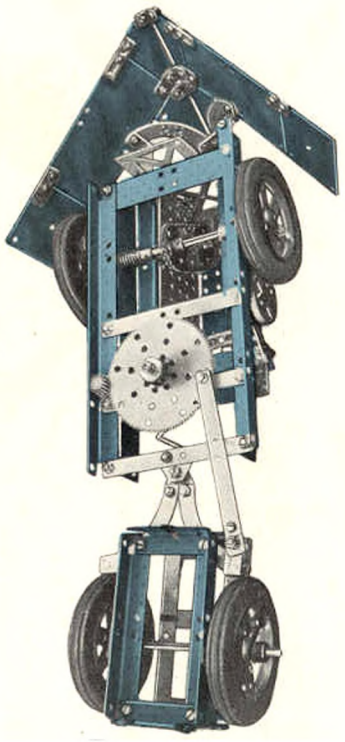

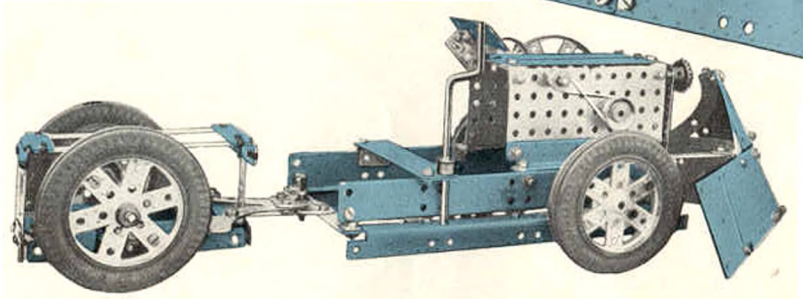

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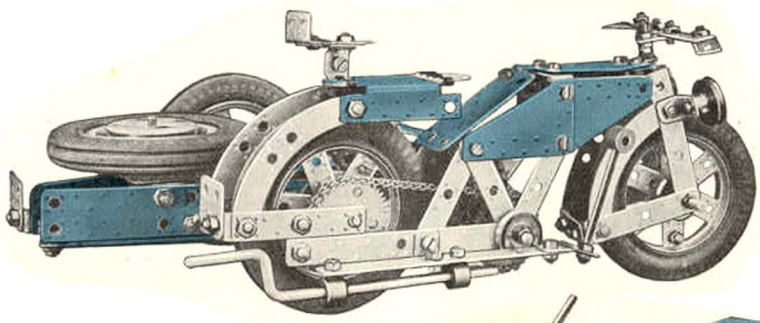
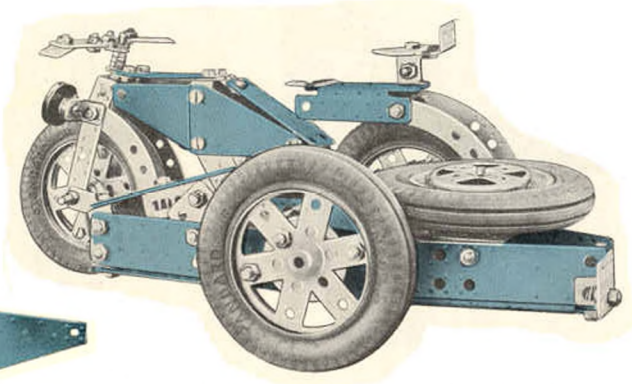
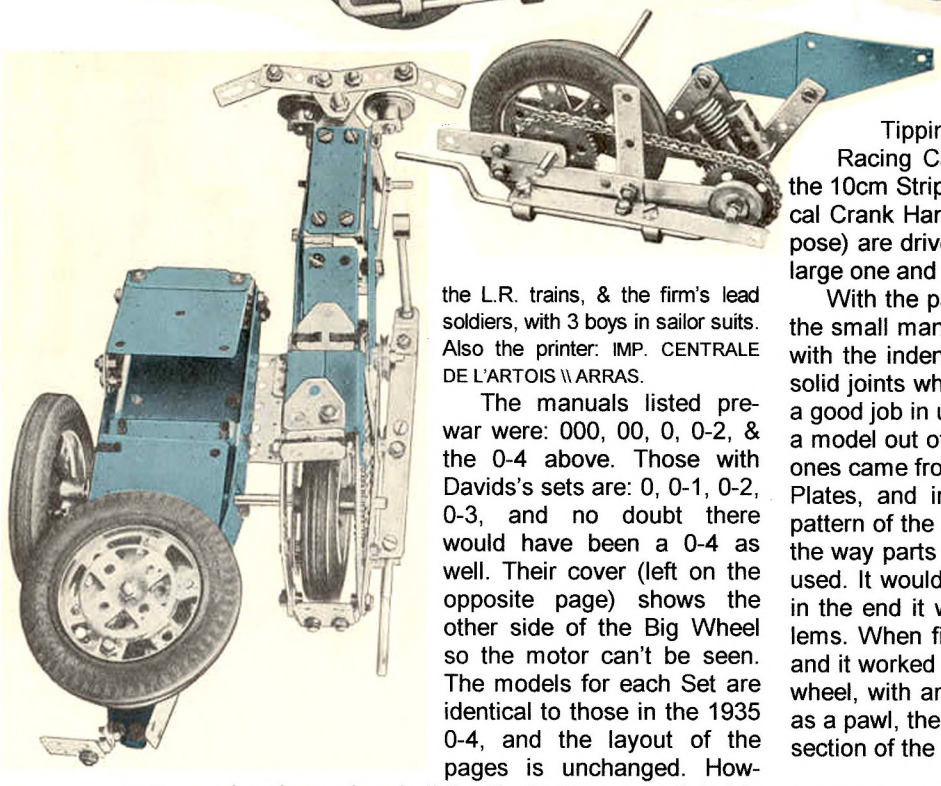






Tipping Lorry is from Set 0. The track rod of the Racing Car is moved by the steering column rotating the 10cm Strip. The Snow Plough is steered using the vertical Crank Handle. The Wheels on the side (blowers I suppose) are driven from the front axle via a chain drive to the large one and then a belt drive to the smaller Wheel.

With the parts to hand it was possible to make some of the small manual models and they were very easy to build, with the indentations ensuring correct alignment, and very solid joints when held by a N&B. Even the Spring Clips did a good job in undemanding situations. When I tried to make a model out of my head several difficulties arose - the main ones came from the absence of a centre hole is some of the Plates, and in-between holes on their edges; and the V pattern of the indentations between the holes, which limited the way parts could be joined if the indentations were to be used. It would have been easier with more small parts but in the end it was possible to circumvent the various problems. When finished my 40cm long Crane felt very sturdy and it worked well, included using the 45t Gear as a ratchet wheel, with an Angle Bracket on the end of a Curved Strip as a pawl, the method shown in the Standard Constructions section of the manual.

the L.R. trains, & the firm's lead soldiers, with 3 boys in sailor suits. Also the printer: IMP. CENTRALE DE L'ARTOIS \\ ARRAS.

The manuals listed pre-war were: 000, 00, 0, 0-2, & the 0-4 above. Those with Davids's sets are: 0, 0-1, 0-2, 0-3, and no doubt there would have been a 0-4 as well. Their cover (left on the opposite page) shows the other side of the Big Wheel so the motor can't be seen. The models for each Set are identical to those in the 1935 0-4, and the layout of the pages is unchanged. However no colour is used and all the illustrations are printed in navy blue on poorer paper.

These manuals have 16, 32, 48, & 64 pages including the covers. Compared with the 1935 0-4: the IFC is blank; the BC has only the printer on it, IMPRIMERIE CENTRALE \\ DE L'ARTOIS - ARRAS; only the first page of constructional details is given; there are no Illustrated Parts, Set Contents, or No.5/6 models, & the last models are on the IBC. The equivalent page numbers of the model pages are one less.

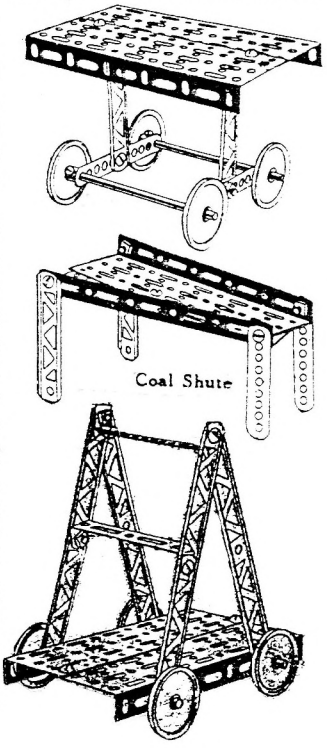
Returning to the 1935 manual, it's thick, has lots of models, and is nicely produced, with mostly clear illustrations and the blue parts in colour. Some fairly brief building instructions are given for the larger models, and the parts needed for all but the very simplest are listed. In these lists the parts are not named but instead tiny ideograms are used, with a size in centimetres alongside when necessary.

The models cover a wide range of subjects, many mechanical or do to with transport, but also agricultural, fairground, & domestic models. They are fairly simple mechanically but gearing is used in many of the larger models, while some of the Cranes have a brake on the hoisting motion, and some Vehicles have 'proper' steering.

Many look quite attractive to me, and Plate 73 of *Eisenzeit* shows a nice Tractor & Trailer, together with a fair looking Crane that could be improved. On the whole, as was intended, the relatively few holes in the parts, and the indentations to simulate rivets, does improve realism. The Wheels generally look quite well for the models of the time, particularly when fitted with Tyres, and they have numerous other uses. They are nutted to the Threaded Rods that are used as axles, and though a Bush Wheel could be bolted on for use on the normal Axles, the recessed centre would make it difficult to do so when 2 are used as a pulley or to carry a Tyre. In any case there are only 2 even in Set 4. The Axles are mainly used with the Gears.

Some of the models are shown opposite and above. The

**Small ERECTOR Sets** A little more on the manuals/model leaflets, thanks to Ron Michalowski. First a copy of a 6 page booklet with a cover (about 18*13cm deep) identical to that of the M 973 Sheet mentioned in 15/410, except that the Ref. No., if there is one, can't be seen on the copy. The model pages are the same too, and the 2 extra pages (the 4th & the back cover) have models from larger, regular sets. They are made from the new 1924 parts and so that is the earliest possible date for this booklet.

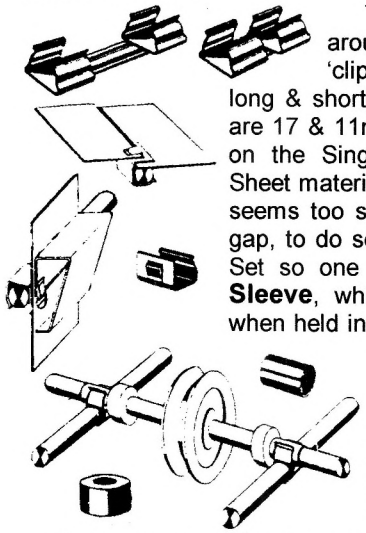



Ron also sent a copy of a No.0 Leaflet, © 1924, which is about 17½*54cm, folded in two. On the front are the Contents and 4 models, with Buffers (unnamed) at top left. Although half the second leaf is missing, it can be seen that the inside pages contain more models, including the Alphabet, & the last one is Carpenter's Bench. The back cover has models from larger sets. The Contents agree with those in the *A.C.Gilbert N/L* (see 15/410) but, as should have been noted in OSN 15, they include a Long Double Angle (DAS). Its normal PN was 'N' but here it is P96, a number not seen elsewhere. It can be seen in one of the models on the right, all of which are from this Leaflet.

**More on CLIP-CRAFT** This U.S. system was described in outline in 14/390, and now Kendrick Bisset has kindly sent more details from a No.1 Outfit he has acquired. It's not complete but the manual is with it.

The **Set** is in a tubular box, about 78mm diameter and 315mm high. The Clips are in two cardboard containers, 2¼" Ø and 1¼" high.

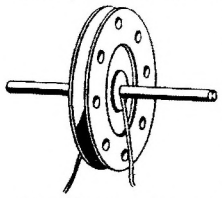
The **Rods** are aluminium, .171" (11/64") Ø, with square ends. The straight ones found are 20, 40 & 80mm long but 3 longer ones are shown in the illustrations of the parts in the manual. Two of one Curved Rod make a circle of roughly 80mm o.d.; 4 of the other make one of 160mm o.d., or a bit less.



The **Clips** are steel, around .011" thick, and the 'clip' part is 4mm long. The long & short straight ones (above, left) are 17 & 11mm long. The small 'finger' on the Single Clip is shown holding Sheet material in place (opposite), but it seems too small, and with a too small gap, to do so. But no Sheet was in the Set so one can't be sure. The rolled **Sleeve**, which can act as a bearing when held in a Clip, is 6mm long and a clearance fit on the Rod. The part that looks like a collar is said in the Manual to be a **Rubber Washer** and is used as an Axle Stop. These two parts can be seen left.

Only one size **Sheet** is shown in the Illustrated Parts but several different sizes are used in the models including a small triangular one. Perhaps the modeller had to cut them to size. In the illustration above a formed triangular section is also shown clipped to a Rod.

The large wooden **Pulley** is yellow, 51mm Ø, 9mm thick, flat on one side and recessed on the other. A Rod will just turn easily in the centre hole, and a cord is shown through it to jam the Pulley to the Rod (left). A hard push is needed to put a Rod into the outer holes, and sections outside a hole had broken away in 4 out of the 5 Pulleys found. No small Pulleys were in the Set.



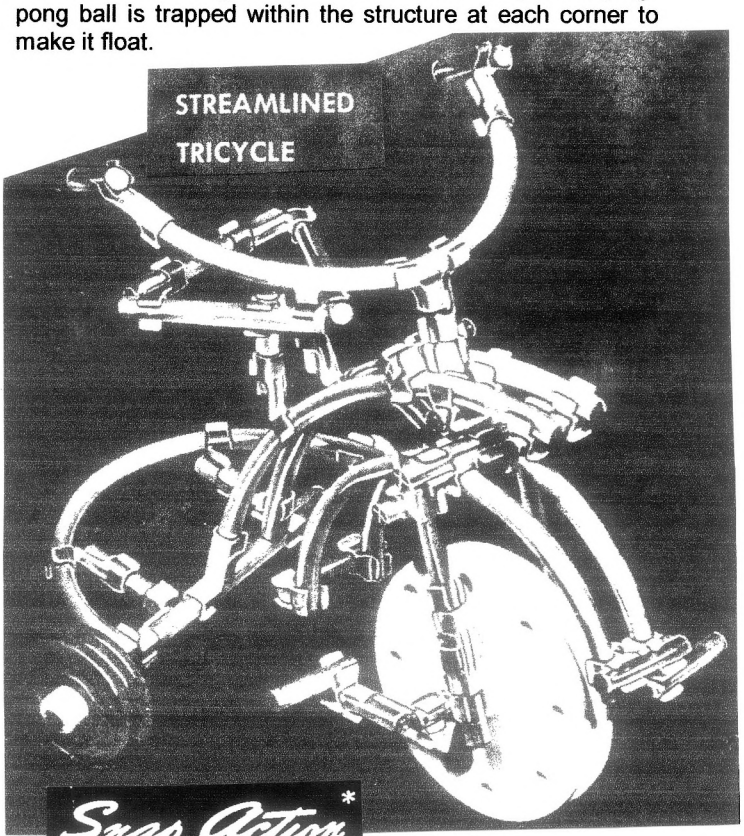
No **Tyres** are mentioned so perhaps they were in one of the larger sets mentioned in the Manual, or came later.

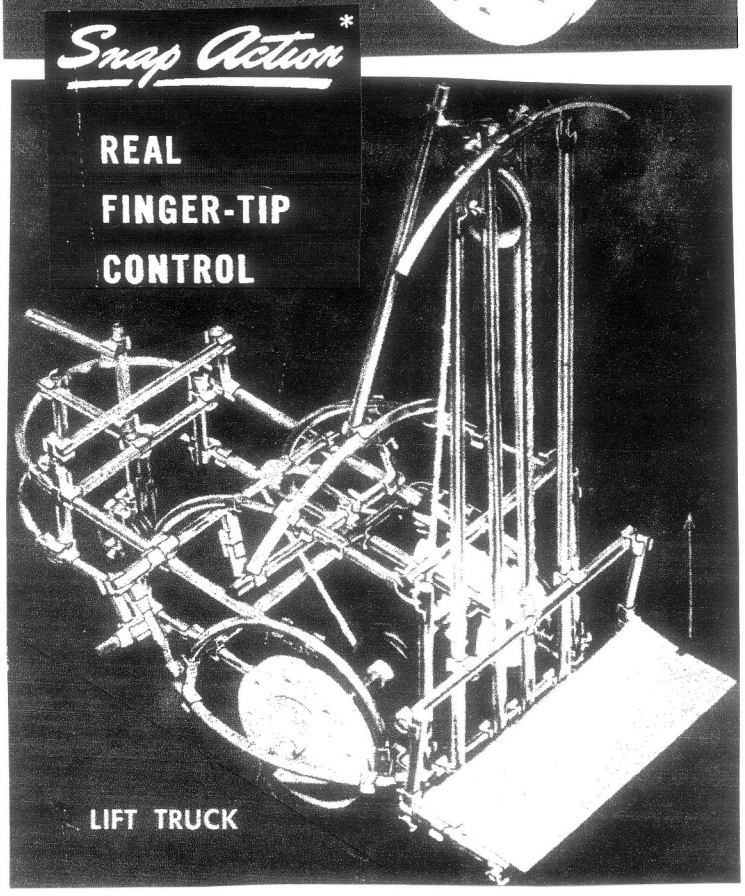
**SUMMARY OF MANUAL** •Name: Clip Craft CONSTRUCTION SET No.1. •Details of maker: Clip-Craft Corp., Empire State Bldg., N.Y.1, N.Y. Factory Yonkers 4, N.Y. •No dates/Ref Nos. •Page size: 201*258mm deep. •No. of pages: 16 unnumbered inc covers. •Language: English. •Printing: models are B&W photos on black ground; cover is red & black with B&W photo of boy with Jet Plane.


•No Parts List, Set Contents or PNs; parts are illustrated on p2. •Sets covered: No.1. •No. of models: 28. •Name, Page No. of 1st & last model (no Model Nos.): ATOM GUN,4; BULLDOZER,15. •Other notes: details from photocopy; constructional methods on p3; see below for notes on firm's address.

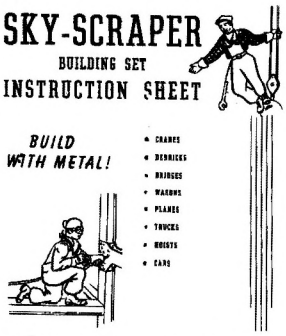
The two words before CONSTRUCTION on the cover are 'Snap Action', a slogan repeated several times in the Manual. The address on the back cover is Clip-Craft Corp., Empire State Bldg., N.Y.1, N.Y. Factory Yonkers 4, N.Y., but the 'Empire State Bldg' has been (ineffectively) blacked out. Also on the back cover is 'Patent Pend.' but no date or number is given. Incidentally Clip-Craft always has a hyphen except in the stylised version above.

For each of the 28 models there is a large photo on a black ground, and the subjects vary from a Rocker to a Crane, and a See-Saw to a Helicopter A few like the Trike below look rather stylish. Where needed, as in the Lift Truck below, movement is cord operated from a built-up crank handle, except that in a couple of the models a right angle drive is achieved by using 2 Large Pulleys made into bevels by putting short Rods into the 8 outer holes. One model called a Float is original - it's a raft with a mast, and a ping-pong ball is trapped within the structure at each corner to make it float.



**'New' System - SKY-SCRAPER** News of another little U.S. system thanks to Kendrick Bisset who has sent details of two incomplete sets that he has found. They are in the usual type cardboard tubular container, about 3½" Ø & 7½" high, light blue & white in colour, with a metal lid. On it is the name, followed by 'BUILDING SET', and then 'Ames Mfg. Co. Inc., Rossmor Bldg., St. Paul, Minnesota'. Also shown are two building workers, and 5 models around the bottom. Opposite the front on the Instruction Sheet with similar graphics but in B&W, & the company's address on it is: 1569 Selby Ave., Saint Paul 4, Minnesota. Kendrick also sent a photo of another Set from the ebay.com auction site; the box is probably identical, except that the label is red & light yellow.



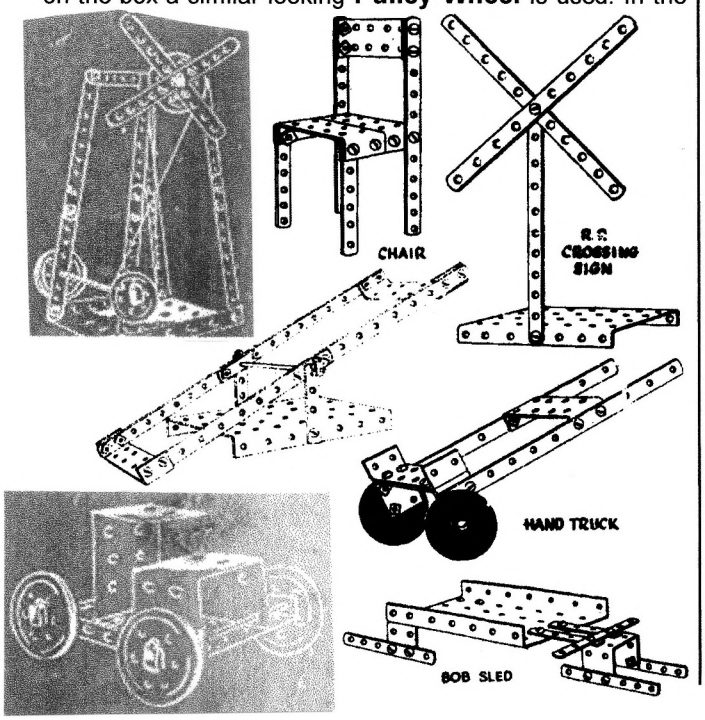

**The Parts** • DATA (in mm) STRIP: •hole pitch/dia, 12.7/3.5; •width, 9.5; thickness, 1.04; •ends semi-radiused. BOSS: not seen. THREAD: 6-32. AXLE DIA: not seen. DP (Mod): N/A. NUT: square & hex, 8.0 A/F; BOLT: roundhead 6.1 Ø; both plain steel.

So the holes are at the normal ½" pitch but are smaller than usual, to match the narrower Strips. Some notes on the parts follow and all are aluminium unless otherwise stated. The quantities in curly brackets are the number found in the Set, or those needed for the models in the Instruction Leaflet, whichever is greater.

- The **Strips** are ⅜" wide with 4,6,10,11 holes {9,2,7,4}. Both 10 & 11h Strips are used in the R.R. Crossing Sign below, and in at least one other model. The **Angle Bracket** is the same width and end radius, with a round hole in each arm {4}.
- The other major parts are 5 **Plates**, all with square corners. One is a Perforated Flat Plate 6*2h, and two, 7*4 & 4*2h, are flanged on their short sides. The others are what I'll call Channel Plates, 4*2 & 2*2h, with 2h deep flanges on their 2h sides. So the 2*2h would be made by bending up the 6*2h Flat Plate. {2,1,3,2,1}.
- Kendrick's parts include two types of hard, black rubber **Wheel**, both about 1¼" Ø. One has tread around the tyre part {4}, while the other looks smooth and has 8 raised 'spokes' in the recess between the hub & tyre. No detail can be seen of the Wheels on the Instruction Sheet models; they run on long Bolts, although an Axle is used as a pivot in a Teeter-Totter (See-Saw), with an ERECTOR-style 'U' **Collar** at each end. In the models on the box the Wheels are of a different type with 6 holes in their face (as below in the Buggy), and are mounted on **Axles**, retained by U Collars. Perhaps they are Pulleys because in the Windmill on the box a similar looking **Pulley Wheel** is used. In the ebay photo an Axle can be seen among the parts and also a **Crank Handle** of about the same length. No Axle, Crank Handle or Collar was among Kendrick's parts.
- **Bolts** of both ¼" & ½" u/h are included in the Sets; in one the **Nuts** are square and in the other hexagonal.

The **Instruction Sheet**, 8⅜*15", folded in two, has small line drawings of 27 models, all very simple but perhaps a little above average for a system like this. Most of the different parts can be seen in the ones shown here. 4 of the 5 models on the container are on the Sheet, apart from the different Wheels, but the Windmill isn't, and is the only model to have a cord drive.

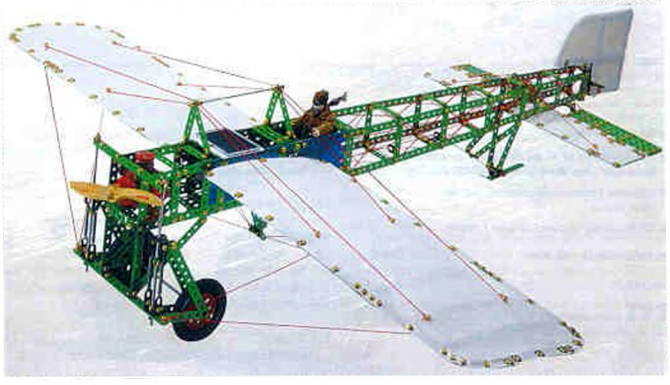
There's no indication of when SKY-SCRAPER was on sale but very likely it was soon after WW2, before ERECTOR had got fully into its postwar stride. Or were there always such small sets in America throughout the period when constructional toys were top of the pops?



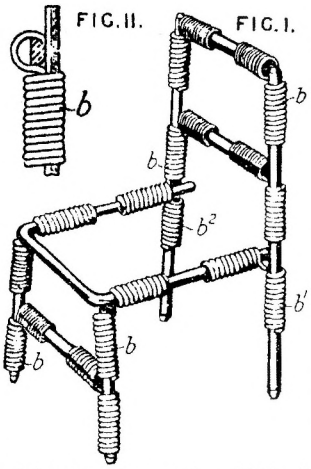

**MÄRKLIN News** This year's new 'super' set from Märklin, No.10861, is to make a model of the Bleriot monoplane, 'La Manche', that made the first crossing of the English Channel 90 years ago. It is announced as a special model for Märklin's 140th anniversary, and is 106cm long with a span of 108cm. From an ad the framework of the model is made from green Strips, with what look like whitish, translucent plastic mouldings as coverings for the flying surfaces. The rudder and elevators are hinged and can be operated from the cockpit (I think); other features are a sprung undercarriage, a Pilot, and a special wooden Propeller, driven by a Motor which is powered by a Solar Cell mounted on top of the fuselage, ahead of the cockpit. The Set is packed in a red box, cardboard probably, with new-style instructions. It contains 1517 parts and was due to have been released in May, price DM 499.

This information came from the Swiss AMS Club with their magazine, and also enclosed was a June 1999 Parts Price List. The standard parts remain the same as in 1998 (see 20/564) except that Axles 102200 & 102210 are replaced by 102220 & 102260, although the latter is shown twice so a misprint may have occurred. In addition 34 parts peculiar to the Lorry (Lastwagen) Sets 1085, 10851, 10852, and the Güterwagen Set 1511 are included. These sets were described in 16/455 & 20/564. Some of the parts are 'specials' such as the lorry Cab, and others are standard parts but in different colours, 3 & 7h Strips in black for instance. Some Cab parts are available in red or white with the same PN. Notable parts are A/Gs, 13h and, in black, 35 & 40h; a 13h Strip; the Lead Screw mentioned in OSN 16; and the 7*19h Flanged Plate for the Railway Wagons.

Each part has a Price Group number from 1 costing DM 0.60, to 7, at DM 17.50. The only #7 parts are a Manual and the Universal. Prices are generally much lower than in the last List to hand, for example the 15cm Ø Flanged Circular Disc & the 19.5cm Flanged Ring are both only DM 5.90, the long A/Gs are DM 2.30 each, and the 95t Gear is DM 4.00. Sounds too good to be true.

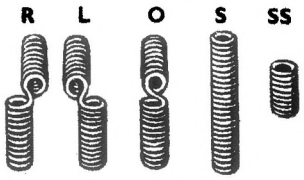


**CLIFFIX** This unusual UK system was patented in 1944 and no doubt appeared soon after WW2. It was very simple with just frameworks made from wire Rods pushed into 5 different types of spiral spring Connectors. It predates ULOXETTE (see 19/553) which worked the other way around, with lengths of spiral Spring joined by rigid Connectors. The 2 sizes of CLIFFIX sets known were called 'J' and 'M', and David Hobson kindly lent me one of each for this account, both very nearly complete and probably unused. Thanks also to Geoff Wright who let me examine another M Set, identical as it turned out to David's.




The patent, 592699, was in the names of W.Clifford, & Tinsley Wire Industries Ltd., the Wolverhampton firm that made CLIFFIX. The Chair opposite shows how the offset Connectors, $b^1$ & $b^2$, allowed crossing Rods to be joined. The Rods were to be an easy fit in the Connectors but the latter would be curved along their length and so grip the Rods. Rods could be joined end to end by a long straight Connector. It was also said that 'rods of half round section may be used and to join two intercrossing rods of this form, the rods are first threaded into a coil b with their flat surfaces in contact and then one or both is rotated (Fig.II) to distort the coil b in order to obtain a strong joint.' This idea was not used in CLIFFIX.

The 5 different Connectors are shown opposite. The actual right-angle Connectors are curved as described in the Patent - it is easy to push the Rods into them, and the curvature gives a reasonable grip. The long straight Connectors have varying degrees of curvature: those with little don't have such a good grip, and those with enough to grip well often leave the Rods rather out of line. The short Connector, SS, is meant to be used as an axle stop but the ones seen are loose on a Rod. The Connectors are about 3/16" o.d. and are nickel plated.




The Rods were made of galvanised steel wire, .096" Ø, straight from 1 to 15" long (called Rods), and in a variety of formed shapes: right-angle, U-shape, & circular (called Shapes). All are shown in MCS except PW, two of which form the outline of the propeller on the Aeroplane shown on the front cover. It is 6¾" long. Also the Circle labelled C1 in MCS should be C15. The number associated with the parts is usually the total length of the part in inches, with an end 5 denoting ½", or for circular parts, the diameter.

The only other two parts are made of wood, stained red. The Wheel is cylindrical, 1 1/16" Ø by .4" wide, with a bore of about 1/8"; the conical PN (Prop. Nose) is about .6" Ø and has a groove around its base that isn't shown in MCS. It forms the hub of the propeller.

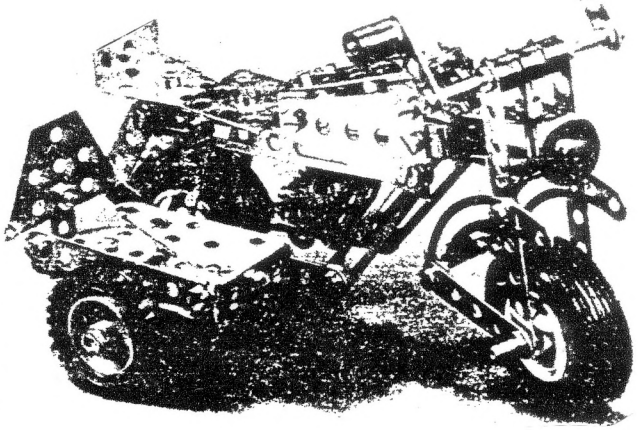
The sets are packed in green boxes that carry a 12*4" yellow label, as in MCS/FB, with a Bridge spanning two green hillsides. Also in small print 'Prov. Pat. Nos. 236168/44 1469/45', but the first should be 23168/44. The J box is 12*4*1⅛", and the M 15¼*4½*1¼"; neither bear any indication of the set's size. The Rods are in the bottom, each size held as a bundle by thin black rubber bands, together with the Connectors & Wheels in small card trays. The Shapes are held to a yellow card the size of the box, which sits on top of the trays. It has 'CODE CARD' at the top and an inch scale at the bottom; in between are the outlines of the parts, each with its PN, and the parts are held over them by red, elasticated cord. On the lid of the M Set lid is a price of 19/6 in pencil, about the cost of a MECCANO No.3 in the late 1940s.

The manual cover shown in MCS, & on the front of this Issue, is the same for both Sets. It is yellow and again has no indication of the Set No. The Model Nos. of the first 24 models start with 'D', followed by others with a J or M prefix, so perhaps a smaller D Set existed or was contemplated at one time. I wonder what D, J, & M signify. Apart from a page of small illustrations of 6 M 'supermodels', the J manual stops after some 'JM' models, which vary in size depending on which set is used to make them. The M manual has in addition 12 'M' models, but also in the M Set are 3 separate 9*14" Model Sheets which show the supermodels, plus two other large models, in detail. These are good size models: the largest, a Gun Boat, is 33" long, and a Big Wheel stands 23" high. The former uses nearly all the 144 Connectors in the Set, but only 98 of the 227 Rods. All models are shown as a line drawing with a Parts List, and a selection of them can be seen on the front cover of this Issue.

**SUMMARY OF MANUAL** •Name: CLIFFIX •Details of maker: TINSLEY WIRE INDUSTRIES LTD., Department "CLIFFIX", WOLVERHAMPTON, ENGLAND. •Dates &/or Ref Nos: none. •Page size: 253*105mm deep. •No. of pages: 16 unnumbered inc covers. •Language: English. •Printing: line drgs of models; yellow cover as MCS & p589 with colour ½tone of boy with Crane. •Page No. of Parts List/Set Contents & highest PN: 4,W. •Set covered: J. •No. of models: 39 inc 24 D, 12 J, 3 J.M models. •Name, Model No., Page No. of first & last model of each set: TABLE,D.21,5; SWORD,J.M.24,13. •Other notes: (i) The J.M models could be made in 2 sizes from the J or M Set. (ii) 6 sample large M models are shown on p14. (iii) The printer is on p15: STEENS (Wolverhampton) LTD., WOLVERHAMPTON.

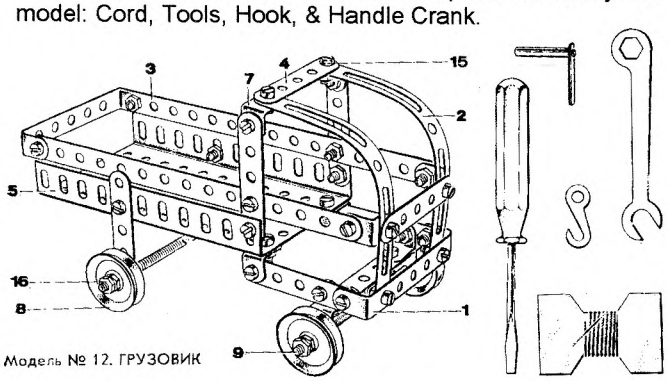
The manual for the 'M' Set is as above but with 24 pages (pp21-22 are blank); 12 M models go from M.5 GONG on p 14, to M.7 MOTOR BOAT on p19. The 6 sample M models are on p20 and are shown, plus 2 others, on 3 Model Sheets (230*353mm): M.21 GUN BOAT, M.29 TANK; M.13 WIRELESS STATION SHED, M.12 WIRELESS MAST, M.8 AEROPLANE; M.9 ROUNDABOUT, M.20 BIG WHEEL, M.10 WINDMILL.


**'New' System - KONSTRUKTOR [14]** This one is from Poland and Jeannot Buteux kindly sent brief details and a copy of the back cover of a manual There are 62 black painted steel parts plus some of plastic, all identical to the German CONSTRUCTION, except for the colour. The holes are 4.0mm Ø at 10.0mm pitch. The cover shows the Motorcycle & Sidecar below, which looks very similar to a No.03 CONSTRUCTION model in a 1980s manual, but with the Plastic Plates used for the seat of the motorcycle and the nose of the sidecar replaced by metal parts. Above the model is the name 'KONSTRUKTOR' & below 'CONSTRUCTOR'.

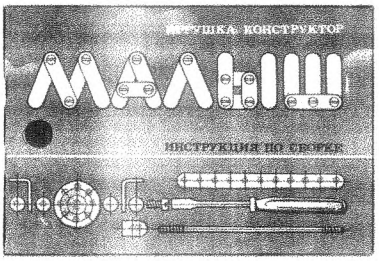


**3 more 'New' Russian Systems** Jeannot Buteux/ Construtorama have kindly sent details of these sets. Unless indicated otherwise the notes below are based on the Illustrated Parts and a page of models from the manuals.

**MALYSH** The dates for this small system are 1980-1995 and its Russian name is МАЛЫШ. Jeannot renders it as MALYCH, but to be consistent I've preferred to keep to the transliteration scheme of 4/75. It's a colloquial word meaning 'kid'. Only one set is known, with 20 different parts that look just like CONSTRUCTION. Most can be seen in the model below, but in addition there are a 9*5h Perf. Plate; 3 other lengths of Screwed Rod; and the parts shown by the model: Cord, Tools, Hook, & Handle Crank.




As might be expected the holes are at 10mm pitch and are about 4mm Ø, but actually vary in size from 3.95 to 4.10mm. The metal parts are nickel plated and the Pulley is white, translucent plastic. The parts are of medium quality but are made of quite thick (1mm) metal.

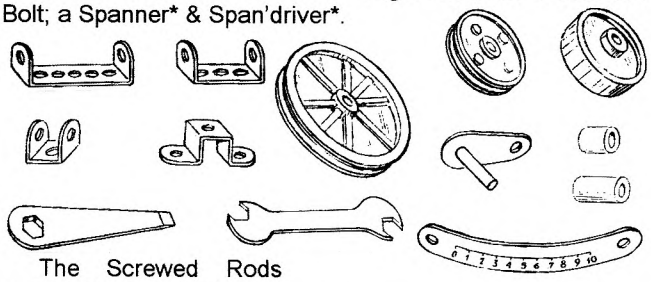



The manual cover, left, actual size 199* 134mm, shows a Rod with Threaded Ends and a Wheel Disc, neither of which are in this set but they are CONSTRUCTION parts. Jeannot sketched the logo (below left) which is in the black circle below the M on the cover, and it reminded me of the one in MCS for YUNOST' (ex ЮНОСТЬ), shown far right, but there are no other similarities between the two systems. At the bottom of the model page is a PR: М. Ц. КиАПО. Зак. 1269 -85 г. Т. 26000.


**KONSTRUKTOR [12]** This one is known from 1988 and as can be seen below the manual has a rather jazzy cover (142*200mm, stapled along the top edge). The parts (and their PNs) suggest that whoever designed the system was well acquainted with the GDR KONSTRUKTION (KNN) - the earlier type with no long slotted holes. But aluminium instead of steel is used for most of the parts, and some are unusual, particularly the Pulleys & Wheel. The holes are at the expected 10mm pitch but at 4.4mm Ø are slightly larger than KNN. In all there are 45 different parts and several different sets were produced.

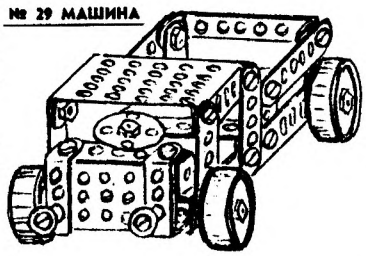

The 'KNN' parts are: • 15,11,9,7,5,4,3,2h Strips. • 5*5 & 5*11h Flanged Plates. • 3*3, 3*7 & 5*9h Perf. Plates, & 3*3h Trapezoidal Plate. • 20,30,50mm Ø Discs. • 2 types of 1*1h, & 2*1 Angle Brackets; 2h high Double Bracket. • The Hook. • 30mm Screwed Rod; M4 Nut and 8mm Bolt.

The other parts, with illustrations of those starred, are: • 9 &16mm Washers. • A Double Bracket*; 1*3*1h, 1*5*1h DAS*; & a Double Bent Strip* (none of these are the extra wide KNN type). • A CNN (or late KNN) pattern Handle Crank*. • 2 lengths of Spacer*, 6mm o.d. • A Wheel*, and 2 Pulleys*, one 30mm Ø, & the 60mm Ø with spokes. • A curved Scale* (but the actual part has no markings on it). • A 50mm Screwed Rod, and a longer one; an 18mm M4 Bolt; a Spanner* & Span'driver*.



The Screwed Rods and N&B are steel, with the Nuts brass plated; the Pulleys are dark blue plastic. The parts are of middling quality.

The Car opposite doesn't perhaps quite live up to the promise of the manual cover.

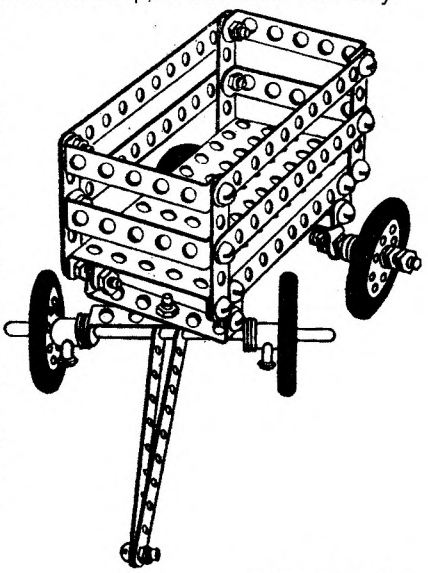



**KONSTRUKTOR [13]** There's nothing to prove it but this set, from around 1975, may well have come from the Leningrad factory that later produced KNR UNIVERSAL'NYI (11/285), KNR MALYUTKA (16/435) & KNR SHKOL'NIK (18/501). All the parts are in the other Sets and they look identical, and have the same names, or very nearly. Their hole diameter & spacing is the same too. In addition certain features of the presentation are noticeably similar. Jeannot noted that there are several sets of this type. The words on the manual cover, opposite, mean literally Small Constructor.


The contents of this Set is much the same as that of SHKOL'NIK, with the same numbers of Strips, 1*5*1 DAS, N&B, Pulleys & Tyres, Rods, and Flanged Plates. But it has six 5*7h Perf. Plates, instead of the 2, plus 6 smaller Plastic Perf. Plates, in the later Set; and the latter also has a Bush Wheel and two 1*3*1 DAS. Incidentally although all the Rods shown in the Illustrated Parts appear to be threaded along their whole length, those in the Set include smooth Axles, Screwed Rods & Rods with Threaded Ends, as in SHKOL'NIK.

Like SHKOL'NIK the parts are well made but are not nicely nickel plated; their steel finish is badly streaked with discoloration. The N&B, Pulleys, & Rods are zinc plated.

The manual is 143*200mm deep, & the cover has only the name above and the model opposite on it. The other 2 manual models to hand are equally simple and none of them do justice to the 32 Strips, 11 Plates, & 60 N&B in the Set. Another similarity to SHKOL'NIK I've just noticed is that although both have Flat Brackets, there are no Angle Brackets of any sort in either. Flanged Plates & DAS provide the only right angle connections in both.



**A BRAL PRIMI VOLI Outfit** Primi Voli is the name on the box, plus versions in French, German, Spanish, & English. The latter is 'First Flights' which perhaps implies records because also on the lid is a list of 5 'primi voli' with a speed for each, from 160 Km/h for a Morane-Saulnier N in 1915, to 396.600 for a Macchi M 39 in 1926. This system is in MCS as BRAL (A), and there were 3 sets, Nos.10, 11, & 14. David Hobson recently acquired an unused No.14 and he kindly lent it to me to examine. In general terms it is quite similar to the MECCANO Aero sets of the 1930s, rather simpler in some ways, with no provision for more than one engine for example, and no C/W motor, but it does include a pair of Tapered Wings as well as 2 pairs with constant chord.

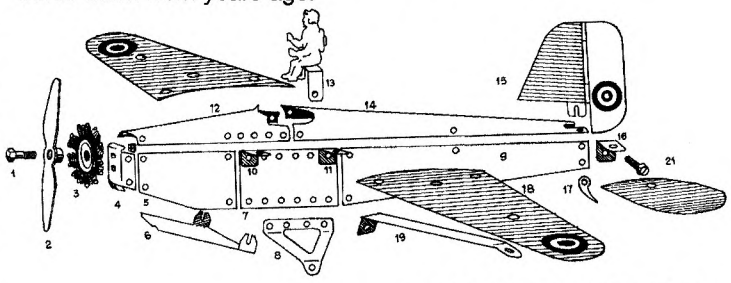
The **box** (17*14*1") has a very colourful lid with a large colour photo of a manual model Biplane against a dark blue ground, and a light blue panel to the right containing the BRAL logo, the main parts, & the list of primi voli. There's a '14' on each side of the lid with '90403' under it. The parts are housed in a white plastic moulded tray, and all the main ones are painted a near matt light brown, lightly oversprayed in places with green and a little orange, to give a camouflaged effect. Also noticeable are the Wings & Stabiliser which have shallow chord-wise corrugations at 2½mm pitch. Small parts are in a card box with two jets, a helicopter, & CONSTRUZIONI AEREONAUTICHE on it.

Other points on the **parts**. • The **Wings** have some curvature fore & aft to stiffen them and improve their appearance. The Tapered Wings are 205mm long with a root chord of 69mm; the Large Parallel Wings have the same dimensions while the Small ones are 167mm long with a 60mm chord. • The **Rudder** is hinged; none of the other control surfaces are indicated in any way. • The **Float** is red plastic, 162mm long, and the supporting Struts bolt into 2 embedded nuts. The **Wheel** is also red plastic, 40mm Ø, convex one side, concave the other with a small boss (bore 3.5mm) and 8 slightly raised 'spokes'. It revolves on an M3, brass Shouldered Bolt which is held to the Undercarriage by a thin, brass hex Nut, 7.0mm A/F. The **Propeller** is black plastic, 113mm o/a, with a 16mm Ø boss which has a flat front face apart from a small pip in the centre. It turns on a brass, 25mm long Threaded Pin which has 18mm of standard 5/32" thread and is lock-nutted to the Nose. The Pin has a shallow groove about 1mm wide near its smooth end and I imagine that when it is pushed hard into the boss a web engages the groove. • **Struts** are nickel and are 10mm wide except the Undercarriage 'V' (8mm), and the other V-Strut that is used between the Fuselage and the Top Wing (about 5mm). This Wing Strut is 2 holes wide at its base and can be seen in MCS. The 'single' Struts have a hole at one end and a 6mm slot at the other. The hole in the apex of the Undercarriage is 3.1mm Ø to take the Shouldered Bolt already mentioned. • A spigot under the white plastic 'head & shoulders' **Pilot** is a loose fit in a 5.0mm Ø hole in the centre of a Special DAS (27*38*27mm o/a), which is also pierced with a 7mm slot in each of its lugs. • The Radial **Engine** is a bright die-casting, about 35mm o.d., and looks the part except that it has 8 cylinders, a number never used in real radials. • The nickel **Tail Skid** is about 34mm long o/a and has a long tail. • The 6 nickel **Angle Brackets** are standard BRAL. • **Holes** are mostly 4.2mm Ø but a few are 4.0mm. • **Nuts** are standard BRAL, zinc with an iridescent finish. The neat 5mm u/h **Bolts** have a 5.9mm Ø cheesehead, and are steel with a chemical black finish. The exception is one 9mm u/h, nickel on steel, with a 6.8mm head - it is needed to assemble the tail & rear fuselage. • The nickel **Spanner** is standard BRAL. The **Screwdriver** is 13½cm o/a with a clear yellow plastic handle: it is identical to the one in the Space Ship set, see 5/89, and looks similar to the ones shown in a product leaflet believed to be from the early 1970s. • The parts seem to be accurately made except that the angles of the bends in some of the Struts may not be quite right. The **finish** is good too though the paint doesn't look very tough and some speckles of bright metal can be seen on the painted parts where the spray hasn't reached the bottom of the corrugations. • A sheet of self-adhesive **labels** was in the set and most look as if they were intended for an Army Set. The 'aero' ones are 2 Italian roundels and tail flashes, 2 German crosses, 2 red crosses on white (Swiss?), and oddly, 2 Union Jacks.

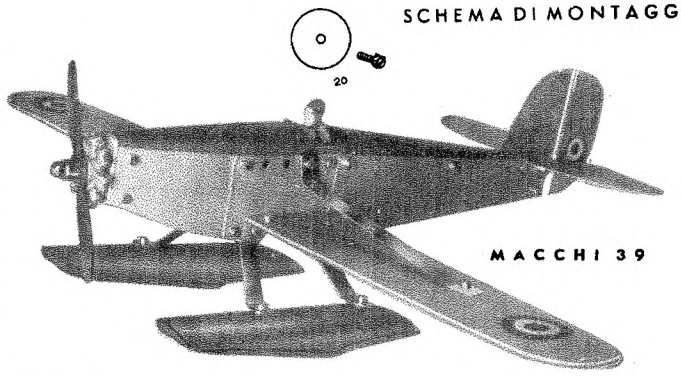
The **manual** has 12 unnumbered pages, including covers, 242*172mm deep. The front cover is as in MCS with the 2 silvery, modern looking aircraft against a light blue ground, and Costruzioni di Aerei at the bottom. The Primi Voli name doesn't appear anywhere in the manual. The white circle at top right, which has '14' in it in MCS, is empty. The dark blue back cover has coloured pictures of a 2-layer BRAL No.4 outfit, an Elettro Bral set, an 8mm ciné projector, & a box with 2 red telephones. Apart from the covers the manual is in Italian, French & German. The inside front cover has an intro saying that experts judge that this is the best aero set available, etc. Next is the figure below and, as explained on the inside back cover, the parts are to be assembled in the order shown. The Prop assembly is an earlier version. The remaining pages show the Breda 39, Caproni 97, Farman, Caproni 113, and 2 seaplanes, the Macchi 39 (below), & the Fokker C.8W. For each there are some words of explanation about construction or about the real machine, and a darkish photo (numbered drawing for the Farman). The Farman & Fokker are as in MCS. From the **sets** stated to be needed for the different models it seems that only the No.14 had Floats, and the No.11 had only the Tapered Wings.

The bright red parts and the shiny nickel Struts might not look well with the drab paint scheme. David has the parts from a slightly **earlier No.14** and they match the colours shown in the 'early 1970s' leaflet mentioned already. All the main parts are painted silver, but both the Fuselage Tops are red. The plastic Floats and Wheels are red plastic as in this Set, but the Prop is metal painted green. The manual with these parts in essentially the same as this one apart from some changes of layout and one or two different products on the back cover. The white circle on the front has '11-14' in it, and all the 6 machines in this Manual are included. The layout of the parts in this box and the one in the Leaflet is identical, but in another ad, probably earlier still, they are arranged differently and are perhaps strung to a card. A full, seated Pilot is shown and the label on the box lid is different. It has a boy, perhaps with a model, in front of the engine nacelle of a real aeroplane, and 2 words which look like COSTRUZIONI AERONAUTICHE, the heading above the Intro in the present manual.

There is no firm information about **when** the Aero sets were available. It is suggested in MCS that they were introduced in the 1930s and they may have continued until the at least the early 1970s. They weren't in Rome shops in the mid-1980s, but one or two shopkeepers said they remembered them from years ago.



SCHEMA DI MONTAGGIO

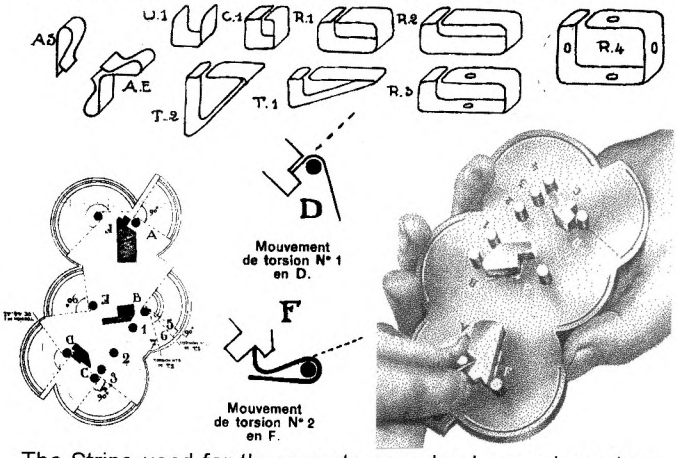


MACCHI 39

MOTEUR FIAT A. S. 6 - 800 HP

**CONSTRUC** Mention was made of this unusual, post-WW2 French system in 16/444 and now, thanks to Jeannot Buteux/Constructorama and Jacques Pitrat, more details are available from copies of pages from a manual. The system is known from 1948 and its name was registered in 1947. Model frameworks are made from Brackets and various lengths of polished steel Strip, held together by spring Clips. And the Brackets and Clips are made by the modeller from similar, special Bracket & Clip Strips, using a Bending Jig supplied. In addition there are a small selection of Plates, Wheels, Axles and so forth, making about 35 parts in all.

**The Parts** • The Strips are 10mm wide and the 6 meant as the main structural element range from 40 to 450mm in length. They are not meant to be bent up into Brackets, etc. All the Strips are marked with their PN. • The 2 Clips and the Brackets are shown below, also the Jig, and (in the centre) how to use it to make the Clips AS.




The Strips used for these parts can also be used as structural elements. Axles run in the holes in Brackets R3 & R4, and presumably the Strips from which they are made are supplied with these holes ready punched, although no holes are shown in them in the Illustrated Parts.

• The other parts that can be seen in the models are a dish like Flanged Plate about 60mm square, Road & Flanged Wheels, 2 lengths of Axle, & a wire Axle Clip. • Other parts not illustrated include: additional lengths of Axle including 200 & 450mm; a Crank Handle (see the Crane in OSN 16); 2 Pulleys; a Driving Pinion; a Crown Wheel; and a Collar. • The following parts are listed but I'm not clear what they are exactly: 2 Plates (Plaque Fixe & Plaque de Rotation), with 2 of each in the largest set; 'Chaînette 2 Maillons', literally 'Small Chain, 2 Links' - there are 2 or 3 of these in several of the sets; and 8 'Éléments Modèles' in the basic Set I - perhaps these are ready made Clips and/or Brackets to encourage the faint hearted.

**The Sets** The sets are not progressive. First there are 3 basic sets, Boîtes Nos. I, II, & III, with, apart from structural parts, the Jig & 4 Flanged Wheels in No.I; 4 Flanged & 6 Road Wheels in No.II; & the 'mechanical' parts in No.III.

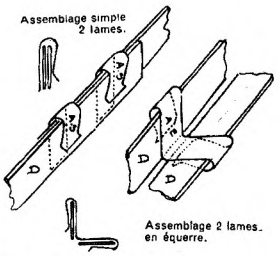
Each of those outfits cost 10 francs, and at 5 francs were add-on Boîtes complémentaires Nos. I & II with more structural parts and 4 Wheels in each, Flanged in the No.I and Road in the No.II.

Then 3 Boîtes de réassortiments (sets of extra parts), again at 5 francs each. No.I has 80 Strips for Clips; No.II, 162 Strips of all types; and No.III, 5 Strips to make Bracket R.4, 38 Structural Strips, and one of the 450mm Axles, not included in any other set.

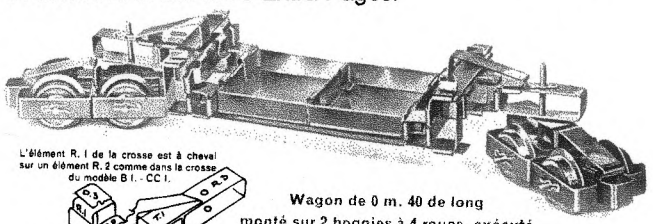
Later these last 3 sets were replaced by 2 at 10 francs each: No.I with 150 Strips for Clips, plus 72 other Strips various, and No.II with the 450mm Axle, 6 Strips for R4, and 76 Structural Strips.

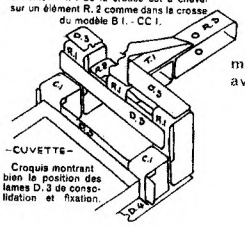
A Boîte No.5 is mentioned on a page about models but is probably a misprint.

**The Models** The basic method of construction is very simple with Strips and/or Brackets held together side by side with the Clip AS, or at right angles by AE. The Instructions advise generous use of Clips and extra Strips for additional strength and rigidity.

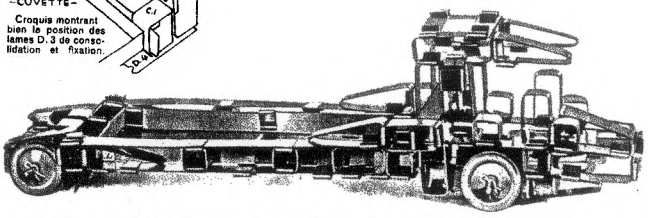



For each model there's a photo, a parts list and some sketches showing how the parts are assembled. All is fairly clear for the 40cm long Railway Wagon below, made from Set I plus add-on Set I, but the Lorry, from Sets I + II, is a bit of a puzzle, even with all the sketches - there isn't room for them here but they will be included in the MCS Extra Pages.



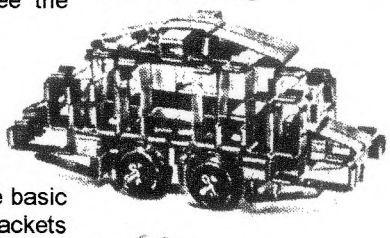


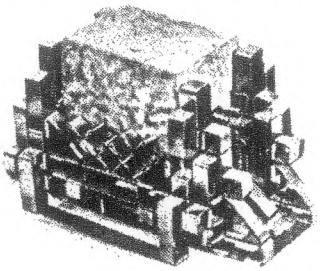

Wagon de 0 m. 40 de long monté sur 2 boggies à 4 roues, exécuté avec une Boîte N° I, plus une Boîte complémentaire N° I.

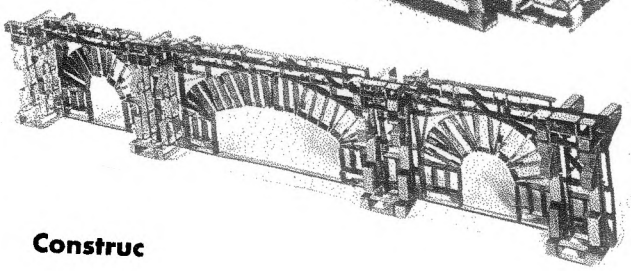


The models are mainly Railway Wagons (for Gauge 1 track) and Lorries, usually with a flat load platform. One Wagon with superstructure is shown below, and under it a Bridge that is in the manual among a page of unnamed models to show what can be done with extra sets. Most of them are recognisable, more or less, but what is the one below right?

The last word to Jeannot, 'CONSTRUC is of little interest, being too intricate, and the models are neither realistic nor very strong.'







**Construc**

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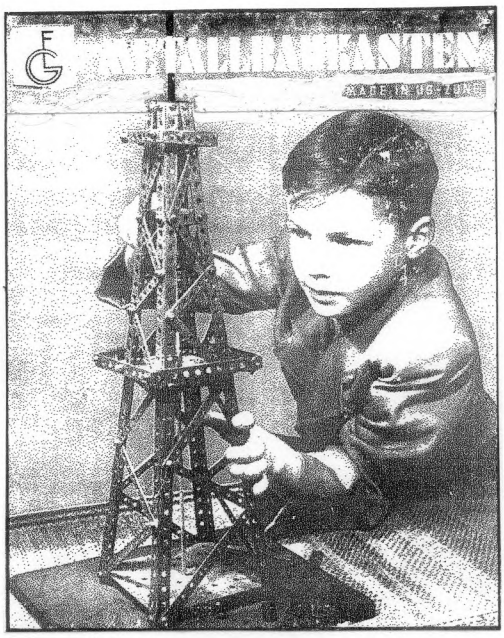
**MYSTERY PARTS** **No.22** This is the Braced Girder with the rectangular cutouts shown in 10/259. As explained in the article on EPA in this Issue, it may well belong to that system.

**No.39** The 6h Braced Girder from Spain, with the small solid diamond in the centre (19/533). Don Redmond asks if this could be an early (1928-35) METALLING part. Perhaps the Liverpool asymmetrical design was not to their taste.

**The GF Metallbaukasten** Jacques Pitrat has kindly sent some details of this early post-WW2 German set, which has no name other than 'Metallbaukasten' at the top of the lid (right), and the Model Leaflet below. Also on the lid are 'MADE IN US-ZONE', and the 'GF' logo (shown larger among the models below). An apparently identical logo can be seen on the red & yellow lid of a small set in the middle of pl.60 in *Eisenzeit*, and the Tower on each of the lids looks as if it might be the same model. The *EZ* set was referred to as F.D.K.K. in 15/412, & those initials were explained in 17/476. Presumably the words they stand for were on the *EZ* box lid.



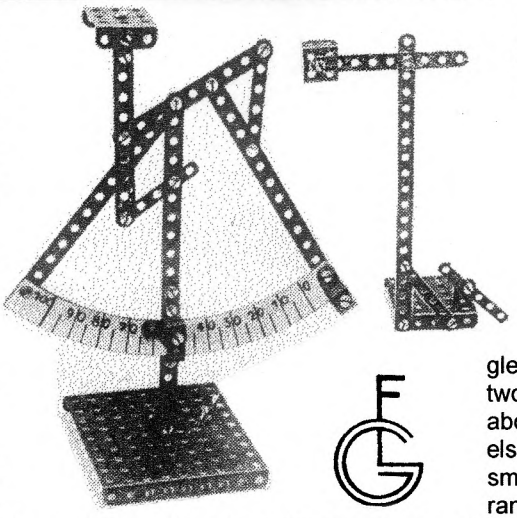
Other known similarities between the sets are that each contain steel parts with a black finish; all the parts have larger than usual holes spaced at 11.9mm, and each has normal and narrow width Strips. So it looks as if the 2 sets may well be from the same system, and if so the *EZ* one was probably the later of the two.

Jacques suggested that the 'GF' in the logo might mean Gebr. Fleischmann, but pointed out that prewar they used the letters GFN, with the N for Nürnberg. In favour of the connection are that Nürnberg was in the US-Zone, and 'Phantasie', the name of a prewar Fleischmann system, but not a very common word, is used in the Leaflet.

The box is about 20*26cm and the parts found in it are listed below, with the quantities in curly brackets. All holes are round unless noted otherwise, and are 4.8mm Ø.

- 9,13,19h Strips {13,9,9}. 5,6,8,9,11h Narrow Strips {9,9,5,5,4}. 1*9*1 & 1*5*1 DAS {6,5}.
- 2*2,3*3,5*5,9*9h Flanged Plates, each with 2 flanges, and the 2*2 has an extra centre hole {1 of each}. The holes in the 9*9h are regular and not staggered as shown in the base of the Tower on the lid.
- An Angle Bracket with one hole slotted {18}. A Reversed Angle Bracket {5}.
- A Wheel, a pressed flat disc with a centre hole and a 4mm rim, 26.5mm o.d. {4}.
- Bolts with hex Nuts {39,33}, and a Span'driver {1}. Square Nuts are shown in the Model Leaflet.

There are no Axles although what looks like one can be seen passing up through the centre of the Tower. Some Strips & N&B may be missing from the Set (certainly some Nuts). One model needs 2x 5*5 Flanged Plates, and another 3x 2*2h, but it would be difficult to house extra ones in the box, which has cardboard partitions and is quite full.




The Model Leaflet is a single sheet, about A4, folded in two. The front panel is shown above and there are 15 models in all, unnamed, with a small photo of each. They range from a simple Traffic Sign to a 'Flying Machines' Roundabout, 22h high with 6 arms carrying 3 small aeroplanes & 3x 2*2h Flanged Plates. The two widths of Strip & all the Flanged plates can be seen in the 2 models above, copied at natural size. The Wheel isn't used in any model and so there are no vehicles.

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**TUPO** This was the Belgian set to make splendid little men with ball-jointed limbs, etc, described in 12/307. Jeannot Buteux has kindly sent a copy of a photo of a German TUPO set, and it seems that the system originated there. There was nothing on the Belgian set or manual to indicate where it was made. The name on the lid opposite is TUPO DER SCRAUBEN-MENSCH, 'The Screw (Mechanical in English perhaps) Man'. At the right In the panel below is a logo with 'A', 'B' & 'C' in it, and this relates to a name alongside which may read (it is very faint): A?TENLOH BRINCK & CO., Milspe (a town east of Wuppertal). Above that is another name: ARTUR DEICHMANN, Godesberg. Another logo on the left can't be seen clearly but seems to be a framework inside a double- lined rectangle. The German set has some parts in additional colours (red, yellow) but is basically identical to the Belgian one.


## SMALL ADS

WANTED **Manual for MÄRKLIN Set No.1011** or photocopy of same. Details please to Ashley Simmons, 48 Athole Grove, Southport, Merseyside, PR9 7DE. Tel: 01704 232401.

FOR SALE **INDEX for OSN 1-20**. 12 A4 sides. From the Editor, price including post, £1.70 UK, £2.10 Europe/sur face anywhere; £2.50 airmail outside Europe.

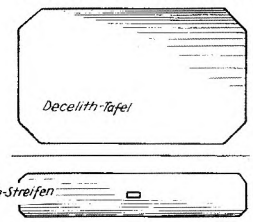
**KLIPTIKO Clear Out**. Trade for OS parts or for sale:
(a) Almost complete contents of No.3 Outfit (cord and hook missing) with original manual but no box (can supply dimensions of box and colour copy of label), 124 parts, good condition, early bronze lacquer finish.
(b) Remains of No.6 Outfit, 400 parts (missing 4 x 4" tubes, 12 x 10" tubes, 1 x 10" bent tube, 1 x 1½" wheel, 4 x hooks, 15 x hub caps, 2 x N/B, 1 x cord, 2 x cables), early bronze lacquer finish but some parts have surface rust - could be cleaned and painted to make impressive large sand-wheel model?
Please write or telephone in first instance to David Hobson, "Woodington", Edford Green, Holcombe, Bath, BA3 5DB. Tel. (01761)232741.

**'New' System: DER KLEINE ELEKTRO-INGENIEUR**

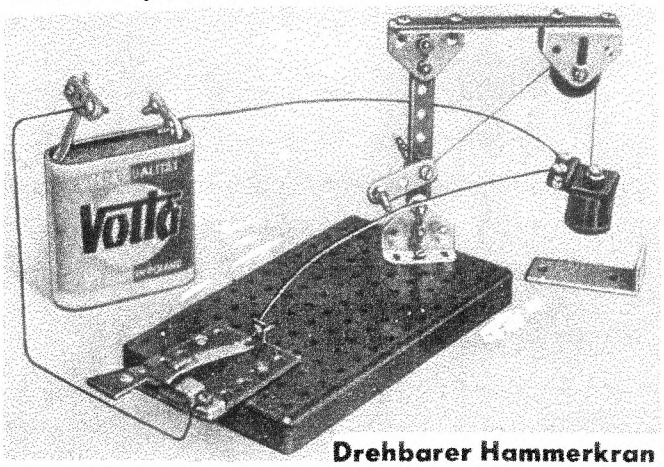
Thomas Morzinck has kindly sent some notes on this East German set, plus copies of the box lid and some pages from the manual. 37 of the illustrations of the 44 parts in the system are the same as those in MCS under ELEKTRO-BAUKASTEN, another GDR system, but made by Elektro-Gerate-Bau (EGB, see 17/477) of Leipzig. The EGB logo from MCS is shown left. DER KLEINE ELEKTRO-INGENIEUR (DKE-I) was made by Deutsche Post, Fernmeldeamt Leipzig (the local Leipzig telecommunications office). It probably dates from the late 1950s/early 1960s, and the artwork on the lid of the set appears to be signed 'Lippoldt 59'. In that case it no doubt came after the EGB set.


The DKE-I box measures 44*31cm and the lid (above), in colour, shows a boy looking at 3 manual models, an open box with the parts inside, and part of the inside of its lid, with a label showing the layout of the parts in the box.

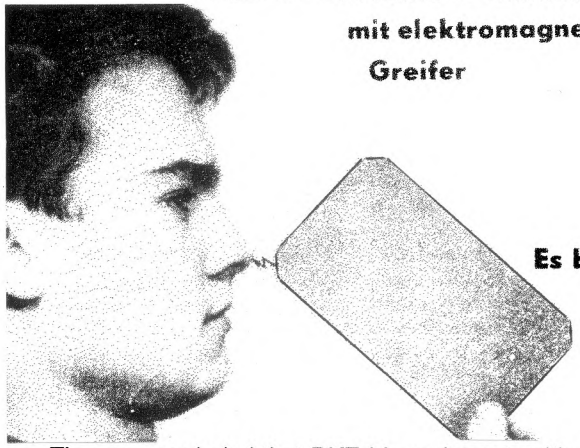
Of the parts that are not as EGB, the most significant change is that the Horseshoe Magnet is replaced by 2 Square-section Bar Magnets plus a Yoke. Also noticeable, the Bulb Holders are different. One new part (left) is called Plastilin and the quantity is listed as '5p'. 10 other EGB parts (including several special Brackets, Springs, and one or two other special parts) are not included in DKE-I. Full details can best be seen by comparing the existing & Extra MCS Sheets. The quantities of the parts that are common to the two systems are identical, except that DKE-I has 2 Spanners, and 4 instead of 5 Long Bolts. Thomas wrote that the Flanged Plate is made of dark brown Bakelite, while the Strips (3, 6 & 9 holes with 4.0mm holes at 10.0mm pitch) & Trunnion are aluminium. The parts described as Flat Plates in OSN 17 (left) are made of translucent plastic, and the EGB ones scale at 15cm long. They are used in static electricity experiments, together with the 'Konfetti' (small pieces of paper).




The Manual has 168 grey pages, 20.5*29.7cm deep, printed in black, including the cover. As with EGB the name of the system isn't on the cover, only 'Anleitungs-Buch zum Elektro-Baukasten' in both cases. Inside are 140 models/ experiments, the same number as EGB, and they are attributed to Horst Hille for DKE-I and Erwin Wunnike for EGB. So although they no doubt cover much the same ground, they are not identical, and they differ somewhat in presentation. Both use the same format for each model with a photograph followed by a list of the parts needed, constructional details, the results of the experiment, & conclusions, but the EGB approach looks a little less formal with paragraphs headed 'What do we see', and & 'How did that occur', for instance. The DKE-I format appears more 'scientific' but the one paragraph that I can understand is quite 'everyday' - under a 'suggested Remark' after one experiment is, 'I must buy a new battery; the old one is exhausted after so many experiments.' The experiments are divided into 6 groups: Magnetism; Static Electricity; Electricity from Batteries; Some Electrical Circuits; Electromagnetism, Relays, Bells & Motors. Two are shown below.



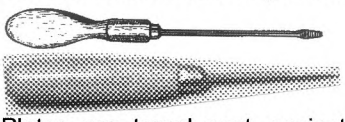

Drehbarer Hammerkran mit elektromagnetischem Greifer



Es blitzt!

Thomas concluded that DKE-I is a nice set, with a lot of carefully designed experiments, many of which parallel those of MÄRKLIN-ELEX, KOSMOS, & ELECTRIC (see 8/183, 15/413).

As far as I can see the parts described in OSN 17 don't include any that are not common to the two systems, and so it's possible that they are DKE-I and not EGB. The only clues are the Tools, the 6h Strips, and the Flat Plates. Richard's parts contain 2 Spanners and two are listed for DKE-I, but only one for EGB. The Screwdriver shown in both Illustrated Parts and in the DKE-I set on the box lid has a shaped handle, but Richard's has a smooth contour and a similarly shaped one can be seen in the box layout on the DKE-I lid. The two types are shown opposite. Against that, Thomas's 6h Strips are aluminium not plastic, and his Flat Plates are translucent against Richard's red ones.



**PUBLICATION - 'BAUKÄSTEN'** That is the name of the book published by the Kassel Museum on the occasion of the OS Exhibition held there earlier this year. It's a massive volume of 352 A4 pages, in German of course, but with numerous illustrations including 240 colour plates. The name on the cover is Ulf Leinweber but inside 9 authors are credited with the 12 chapters of the book. They cover all types of OS from ones using card parts to the modern plastic systems, but deal only with those from Germany, Austria & Switzerland. Quite a bit of space is devoted to the history of certain makers & to the products of specific regions, but not many details of individual parts are given. At the end is a most useful section of over 100 pages giving the names, addresses, & brief histories of hundreds of manufacturers. There is also an extensive bibliography, and an Index, but unfortunately it only takes one to the List of Manufacturers. I've done little more than browse so far but I've no doubt that this volume is a must for the enthusiast. It is soft-bound and this has perhaps allowed its very reasonable price, less than the equivalent of £20 including postage. It can be probably still be bought directly from the Staatliche Museem, Kassel, but if not the ISBN No. is 3-928127-64-0.

**TIN TOWN HIGH RISE** That is the full name of the system mentioned in 20/587, and now Kendrick Bisset has very kindly sent a 'Sampler' set, and more details that came from James R. Flynn, president of Marx Trains. The parts follow the original BILT-E-Z patterns but are made with new tooling. The first samples were produced in April 1998, followed by the first production run in July.

The range of parts comprises the 4 Window/Door Panels shown on the left of Fig.4 in 14/380; the Floor; Friction Connector; 2 lengths of the U-section Cornice (now called Sill); and 5 of the 'curly' Cornice. That's all that are needed to make attractive buildings except perhaps the Balcony, which adds a surprising amount to the appearance of BILT-E-Z models. It is intended to produce it, and perhaps other parts, later. The parts are accurately made, very nicely enamelled, and fit together without any problems, except that (as with the originals) the bends in the Cornice parts aren't at quite the right angles to give neat corners. The necessary changes are easily made though, using only one's fingers. The Door (with 2 rectangular openings) & the 3-Window Panels are grey; the other two Window Panels terra cotta, and the trim buff (though called cream). Additional colours may be introduced later. The Friction is made from flat plate, .010" thick, and it and the Floor are plated with a pleasant sheen rather than a gloss finish.

Two sets are produced, #75582 which will make 'a 30-square building in most configurations. (Example: 6 wide x 5 high x 1 deep)'; and the Sampler set already mentioned that has 5 Floors, 16 Panels, & 4 Cornices to make a 4-storey Tower. This Set is packed in a plain white cardboard box. 7*5*4" deep, with a label saying, 'Tin Town Sampler ALL-METAL CONSTRUCTION OUTFIT No.75824. MANUFACTURED FOR MARX TRAINS BY OVERLAND FLYER MFG. COMPATIBLE WITH 027 TINPLATE TRAIN SYSTEMS. ADULT COLLECTIBLE - NOT INTENDED FOR CHILDREN'. The Instructions (3 sheets 178*216mm deep, stapled together, © O.F. MFG., INC. 1998) tell in some detail how to assemble models but do not show any completed. The various parts are illustrated but the Door Panel has radial lines in the arched top above the door openings, as in Fig.3 of OSN 14, which are not in the actual part. In fact such lines, or better still 3 triangular cutouts, would improve the look of this part no end.

The Sampler set costs $18.95, and the larger one $89.95. The latter, but not the Sampler, is advertised at www.marxtrains.com, with pictures of 3 models. A price list of additional parts is on the back page of the Instructions, and they can be obtained from Marx Trains, 209 E. Butterfield #228, Elmhurst, IL 60126. Tel: (630) 941-3843. Panels cost 82c each, a Floor 39c, a Friction 15c, and the Trims are about $1.35, except the 8" Cornice at $2.50. Carriage extra. The parts in the Sampler would come to about $20 as additional parts. My own rather complicated, genuine BILT-E-Z model, 8 storeys high, 6 Floors wide, and 2 deep, reducing to 1 above the third storey, would need about 44 Floors & 76 Panels, with a total cost of about $110.

I'll prepare some MCS Sheets eventually but since they won't add anything new, it will be best to wait and see if the system develops. I can send a copy of the Price List to anyone on request.

**A PREMIER No.2 Set** David Hobson has recently acquired this outfit and kindly let me examine it. It is unused, complete, and the parts are still strung. In most respects it is of the same ilk as the later of the two No.1 sets described in 18/505. Thanks also to Roger Baker for a copy of a Parts Price List referred to below.

The No.2's red **box** measures 16*12*¾" and the label is like the No.1 but with an outer border showing parts and 6 models, on a yellow ground. Most of the Set's parts are strung to a yellow card with white cord, but the N&B and some small parts are in a brown envelope pushed under the Flanged Plate.

The **parts in the set** are: 2 each of 21,13,9,3h Strips, plus 4 each of 5 & 2h; 2 each of 1*3*1 & 1*5*1h DAS; a Flanged Plate, 5*11h; 2 each of Plates 3*5 & 5*5h, and one each of 5*11h, & 5*5h Curved (M200 shape); Pulleys: a 24mm Fast, 4 Loose 33mm o.d., with Rubber Rings of about 42mm o.d., 2 Loose 24mm o.d., with Rubber Rings 30mm o.d; a Bush Wheel; 2 each of 4" & 1" Axles, and a Crank Handle; 2 each of Trunnions & Flat Trunnions; 4 Angle Brackets, a 2*2h Angle Bracket, & a Double Bracket; 9 Spring Clips, 30 Bolts, & 33 Nuts; a Screwdriver and a Spanner. The parts are attractively displayed but there aren't many of them for the size of the box.

The **notes on the parts** that follow add to those on the later ones in OSN 18. • All **holes** are round. • The **corners** of all parts, and the ends of the Strip parts and Brackets, are fully rounded or very nearly so, except that one end of each of the 21h Strips is semi-radiused. • The 24mm **Loose Pulley** has a brass eyelet boss; the 36mm has a small untapped brass boss, 5/16" Ø and about 4mm high. The bushes of the 24mm **Fast Pulley** & **Bush Wheel** are brass, ⅜" Ø, 4.04mm bore and over 9mm high. All the Pulleys are tin plated. • The **Axles** & **Crank Handle** are 3.96 mm Ø, with sheared ends. The latter is the longer type, 6½" o/a as in the Parts List - the ones in the No.1 sets scale at about 5½" o/a. • The **small parts**, including the 3h long DAS & 2*2h A/B, are dull plated. • The 4 BA **N&B** are plain steel: the Bolts are RH, 6.4mm Ø, & ⅜" u/h; the pressed Nuts are square, 8.0mm A/F, 2.2mm thick, and of good quality. The **Spring Clip** is similar to the MECCANO pattern. • The **Spanner** in both the No.1 sets is as in MCS, flat, with a single, angled end, about 2½" long, but there's a different one in the No.2, single-ended still but with a straight, cranked end, and 2¾" o/a. Both, like the **Screwdrivers** in the two Sets, are dull plated. • The parts look well made and nicely finished.

The **manual** is identical to the larger one described in OSN 18 except for a slightly different type-face and no ad for the **Magnetic Lifting Unit** on the back cover. In passing, that part is a powerful flat, circular magnet inside a red-painted inverted bowl-shaped cover, 1⅝" Ø by ⅜" deep, with a hook in the top. When introduced it cost 3/6, and it was included in Sets 4 & 5.

Also in the Set was a **Price List of Spare Parts** which has all parts in the Manual, and MCS, except the 1" Road Wheel, W5a, & the 1" Bossed Road Wheel, W7a. Prices run from 1½d for a 3h Strip to 5d for the Spanner. Roger's List is identical except for the prices, and the parts above are 1d and 4d respectively.

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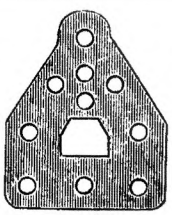
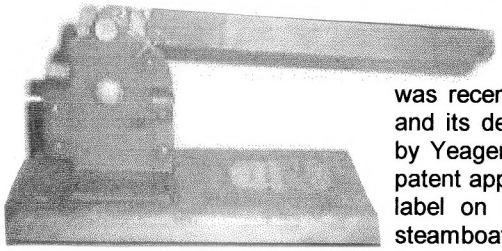
**QUERY 26** No explanation for the holes in the MÄRKLIN Trunnions (see 20/581) has been offered but Ivor Ellard & Thomas Morzinck sent several interesting comments. When the parts were introduced around 1930 (they are in a 1931 List but not in one from 1929) they had a shaped hole (opposite) instead of the hole 7 & the slot, and the holes 9 & 11 were round, not elongated. The pattern shown in OSN 20 was introduced in the early 1960s, and apart from the elongation of the bottom holes to give easier adjustment, the reason for the change isn't known. The slot is just deep enough to take a MÄRKLIN 4mm Axle but not a MECCANO one.

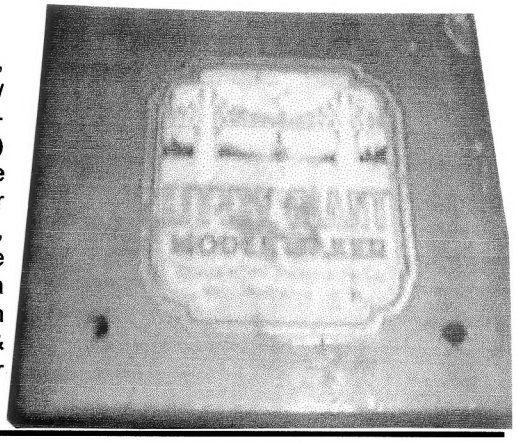


Nr. 131 a
**Lagerplatte,** flach

On the original cutout, Ivor mentioned that in one model an electrical cable was passed through it. Thomas suggested that if a Strip were suitably pivoted about hole 1 in the Trunnion, its angular movement could be limited by a Pin mounted in another hole in the Strip, 2 holes from the pivot point, moving within the cutout.

**The LITTLE GIANT MODEL MAKER** There were a number of UK, French, & German 'DIY' systems but up to now none from America have been recorded. The LITTLE GIANT Tool (left) was recently auctioned at the ebay.com web site and its description ran, 'Little Giant Model Maker by Yeager "Hy" Products Co., Williamsville, N.Y., patent applied for.' That is probably what is on the label on the base (right), which also shows a steamboat passing under a bridge. The description goes on, 'This is a neat little tool - it bends, cuts, shears and punches metal & wire for models, like an erector set but you make your own parts. No box or metal stock, just the tool.' The tool appeared to be painted red.

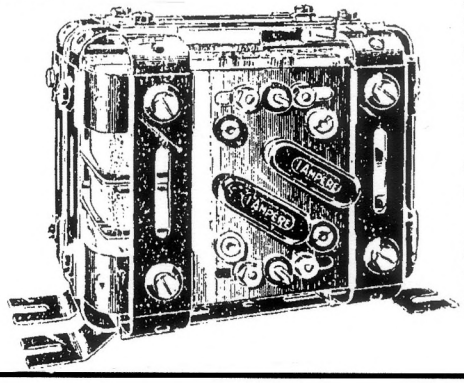




**MULTIMOTORE** This was the Italian version of the French MULTIMOTEUR (see 20/585). It dates from around 1947, and was mentioned in 15/426; now Jeannot Buteux has kindly sent a copy of a Leaflet which describes briefly a range of 12 Sets from 3 Groups. The name of the firm on the Leaflet is G.E.M.M.A., VIA BORGAZZI, 4, MONZA, and no doubt it was made under licence by them, or perhaps they imported the sets or parts. The logos of the two systems are very similar.

One side of the Leaflet has the Motor opposite, and an introduction to the system, with talk of the possibility to 'realizzare 100,000 construzioni'.

The sets are listed on the back and in Gruppo I, "ELEMENTI", are P6 (5 different Bells with an illustration of the one in 20/585); P7 (Telegraph with a key & buzzer); P8 (2-way Telegraph with 2 keys & buzzers); P9 (Optical telegragh, as in OSN 20, with 2 units); P12 (4 Motors with square frames, probably similar to the one shown in 12/304); and P13 (4 Motors with square & circular frames, no doubt the Set in OSN 12.). Each set is said to contain a manual.


Gruppo II, "APPARECCHI E MOTORI", has 3 sets. D1 is the basic outfit and a Motor quite similar to the 'P' ones is shown but with an octagonal frame and shaped pole pieces for the field coils. D2 & D3 are add-on sets, and the Motor opposite is made using all 3 sets. Each has a manual, called Album I, II, & III respectively.

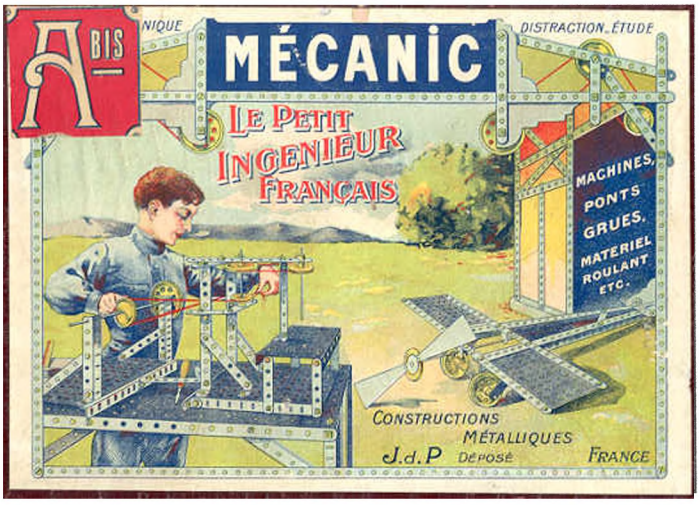
"TRASFORMATORI" is Gruppo III's title, and again there is a basic set T40B and 2 add-ons, T41B & T42B. 2 manuals are mentioned, Album I for the T40B, and Album II for the T42B. The models would no doubt work at low voltages and '4 e 14 Volt' are mentioned. Opposite the model illustrated in the Leaflet; '1 AMPERE' can be seen on the 2 diagonal elements on the front (fuses, connecting plugs?).

Jeannot also wrote that MULTIMOTEUR was still on sale in 1949 from a College of Electricity in Paris.

**More on MÉCANIC** David Hobson kindly lent me an 'A bis' conversion set that he had come by. It contained some parts, though not all would have belonged to the original set, and the notes below add to those in 12/314.

**The box** is a very dark red, 27½*15*2cm, and blue-grey inside divided by integral partitions. The label below is very attractive in full colour, & there's a similar one inside the lid, but without the 'A bis' so it's like the manual cover in MCS.

**The Parts** • **DATA** (in mm) STRIP (11-hole): •hole pitch/dia, 12.7/4.3; •width, 12.7; thickness, 1.2; •end radius, 6.7. BOSS: •o/d, 9.2; •i/d, 4.22; •brass; •single tapped. THREAD: 5/32" BSW. NUT: sq 6.4 A/F; BOLT: cheesehead 5.4Ø; both natural brass.




- The 4-7h Strips are .8mm thick, the 11 & 14h 1.2mm.
- The Flat Sector Plate is as shown in MCS with slightly curved ends. The holes are 4.2mm Ø, a little smaller than those in the other parts, & the slotted holes are 9mm long. It is painted a dullish black.
- The 36mm Pulley is 38mm o.d. and the discs are made of unpainted aluminium, with "MECANIC" and J. de P. stamped on the outer disc in a circle around the boss. The top of the boss is slightly radiused.
- The Signal Square & Disc (right) are both made from sheet brass. The side of the Square is 57mm: the front is red & yellow, & the back plain red. The Disc is 56mm Ø, and dark blue both sides except for a narrow, yellow outer ring on the front.

- The Propeller is 105mm o/a and 18mm wide at the tips.
- The Angle Bracket is about 11*14mm, with a 6mm long slotted hole in the short arm and a 9mm in t'other.
- The Spring Clip has narrow wings and is virtually identical to the equivalent MECCANO part.
- The Bolt, 8mm u/h, is nicely machined and has a deep, 3.5mm, head; the Nut is pressed its thickness varies from 2.4 to 2.6mm. Both look as shiny as new.
- Finish. The parts are well made and, apart from those mentioned above, are nicely nickel plated.

**AUTOMAT** Following the account of FAC in OSN 18 & 19, here is another system, broadly equivalent in scope, but with a more straightforward approach to the structures on which the mechanical components are mounted. In this case it was never intended that the parts be used for anything other than industrial purposes in making demonstration models, prototypes, mechanisms, and small mechanical units. It was originally produced in Switzerland but is now made in Germany. The founder of the company, H.G.Stumpe, explained in a letter to the late Dennis Higginson in 1993, that as a young mechanical engineer he was responsible for all aspects of producing precision laboratory equipment, and this led him to analyse which parts were most commonly needed for this class of work, and ultimately to produce them commercially. As well as saving time and money, this often allowed machinery to be made more compact, and also allowed changes to be made much more easily. Another major advantage was that it often permitted scientists and others to make up, or have made up, what they needed without resort to detailed engineering drawings, which are costly to produce and sometimes difficult for laymen to interpret.

Production started in earnest in 1958 in Zürich following publicity in the technical press, and this led to orders from technical schools and institutions, as well as from many different industries. In 1965 the firm moved to Schriesheim in the Black Forest, near Heidelberg.

This account is mainly based on the following. • A Parts List which more or less matches a Price List dated August 1961, and several other instructional and promotional items from the same period. Also a small selection of parts which seem to be of that time. • A later Parts List, undated but it fits between the last & next items, so I'll describe it as 'mid-1960s' (m60s). • A 1970 Parts List. • A 1978 Price List, and a Parts List & Leaflet on new parts from about the mid-1970s. • A 1993 Catalogue & Price List. • A 1995 Price Lists of sets.

Since the system has had well over 500 different parts over the years, it will be impracticable to describe all of them in detail, or even mention every one. In particular I'll generally pass over the many Washers, Spacers & Special N&B that have been used. All known parts will be included in Extra MCS Sheets but since some of them are only found in one of the above Lists, there may be others from the intervening years that remain unknown.

**THE COMPANY** In 1961 the name of the company was Automat Precision Engineering Ltd., of Limmatquai 120, Zürich 1, and their logo the cam opposite, in red. In the literature the system is usually called THE AUTOMAT. The mid-1960s & 1970 Parts Lists carry the name Automat Service International, D 6095 Schriesheim, W. Germany. In the 1978 Price List it is COMPACT TECHNIK BAUKASTEN GMBH, Branichstraße 8, D-6905 Schriesheim. 1993 sees 'compact technik gmbh', D6905 Schriesheim (D 69198 on the 1993 & 1995 Price Lists), with the 'ct' logo above in blue.

**AN OVERVIEW OF THE SYSTEM** In **1961** 358 parts were listed. Frameworks were made of steel A/Gs, quite like MECCANO, with holes at ½" pitch but slightly smaller at 4.0mm. To go with them an Angle Bracket, some short Strips, small Plates, & Corner Brackets. Also a Gearbox Side Plate. The thread of the N&B was (& is) M3.5, and Spacers & M3.5 Screwed Rods were also used in assembling structures.

Some Shafts were 2.5mm Ø but the main size was 4mm, and the latter will not always pass through the 4mm holes in the structural parts. Normally bearings would be a ball race or one of the two types of plain bearing provided. There were Bearing Blocks for both Shaft sizes, a 4mm Ball Race with Housing, and Threaded Bushes bored 4mm. The latter could be bolted into oversize holes & slots in various Bearing Brackets, or in the Gearbox Side Plate.

There was a wide range of Gears including Bevels, Worms & Worm Wheels, Racks, a Toothed Sector, and a Toothed Segment. The spur gear module was .75, slightly coarser than MECCANO, while the Bevels were .8. Sprockets and a Toothed Sector for 5mm pitch Roller Chain were listed.

Collets were used to fasten all the Gears, and the various Pulleys in the system, to both sizes of Shaft.

Other parts listed were various types of Coupling, a wide selection of Levers, Crank Pins, Lead Screws, and numerous parts for special applications. The latter included a planetary gear, a Maltese cross mechanism, a friction ratchet, a cone clutch, and cams.

Most of the Gears and many other parts were made of aluminium alloy.

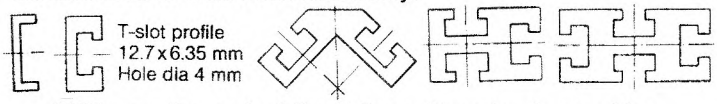
The major change by the **mid-1960s** was the use of ½" Square Girders, made from square alloy tubing, perforated at standard pitch, as an alternative to A/Gs for frameworks. Special Connectors were provided to join them, but all the other structural parts could of course be used as well. The Tubes and their Connectors were called 'The AUTOMAT COMPACT Frame System (DBGM pend.)'.

Among the new parts were a 12t Pinion, a 24*17h Perforated Plate, a Self-aligning Plain Bearing, and special parts for a Pen Recorder.

The introductions in **1970** included mating Dovetail Sections, to allow sliding movement with minimum play, Toothed Pulleys & Belts for them, and Helical Gears. Also parts to allow gears etc to be easily moved, one a Hub with a hex bore to slide on the hex portion of a new Shaft. 6mm Shafts & Bearings had not yet been introduced but were perhaps not far away, because a 6mm version of a Ball Bearing Housing was listed, as well as a 4mm.

By **1978** a good many changes had taken place including a full range of 6mm Shafts and associated parts. The A/Gs & Angle Bracket were no longer listed and all frameworks were made from the Square Girders (and various other alloy Girders, see below). However the Corner Connectors for the Girders had been replaced by Corner Cubes & Tenons which were screwed together to make up any of the original configurations.

As well as Square Girders, 5 other extruded alloy Girders were listed, each up to 16½" long. The sections are shown below - the U, 1T-slot (½*¼" o/a), Angled 2T-slot, 3T-slot, & 4T-slot - and they allowed much more rigid structures to be built when necessary.




**1993** saw the end of the 2.5mm Ø parts. A new idea was a number of press-fit Bosses for use where parts were not unduly loaded. A few fittings and other parts were now made of plastic.

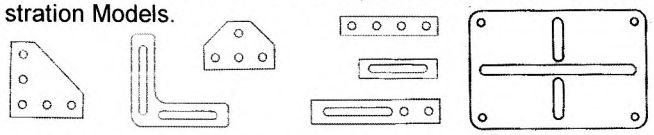
Many of the special parts for gear & clutch mechanisms were no longer listed, probably because their main use was in demonstration models, and by this time these were all available in the range of 75 ready built COMPACT Gear Demonstration Models. Also many of the small fittings and other special parts had been discontinued, but nevertheless the total number of parts has risen to about 440. This increase over the 1961 figure largely reflected the additional structural parts that had been introduced.

**THE PARTS** In the notes that follow the few dimensions that have been taken from actual parts are shown in italics. Parts for which the material isn't known are usually alloy, but the N&B, and many similar parts are steel, and many of the smaller fittings brass. Alloy parts were anodised, natural colour originally, but by 1993 all, apart from the alloy Girders, were in a variety of colours; brass & most steel parts were nickel plated, but some steel parts (and the few of die-cast zinc) were, as noted below where known, chemically

blackened. The PNs consist of a 2-figure group number (broadly denoting the type of part) plus a 3-figure part number, eg 40.006. The names of parts used below are not always the AUTOMAT ones. Asterisked items are illustrated.

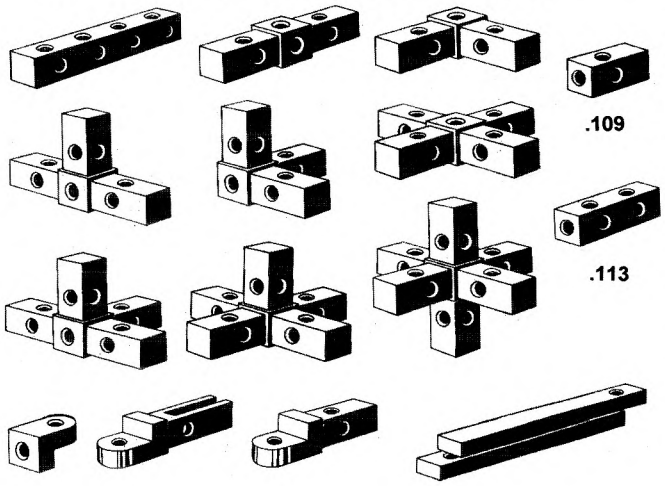
**STRUCTURAL PARTS** In 1961 the main members were MECCANO-like **A/Gs** with 5,7,10,15,20h, *9mm* long slots, & slightly rounded corners. 2 & 3h ones were added in the mid-60s List and the 20h was not listed in 1970. None were in the 1978 List (or in a 1973 dealer's list). Most of the other 1961 parts were used to make and reinforce joints: an **Angle Bracket** similar to the A/G but *10mm* wide, a **4h Strip*** & a **Short Slotted Strip***, both *10mm* wide, and a **Long Slotted Strip***, *12mm* wide. The slots were *30* & *35mm* long. These parts were steel, *1.2mm* thick except the *2.0mm* thick Long Slotted Strip. In 1993 they were all listed as 1.5mm thick with a black finish. Also **Rectangular Plates** 2*2,3,5h; 2*2 & 3*3h* **Corner Brackets**; a 5h wide **Double Corner Bracket**; and a **Flat Slotted Angle***. The 2h **Corner Bracket** was not listed in 1978 but by 1993 a new 3h wide **Double Corner Bracket*** had appeared. All these parts had sharp or slightly rounded corners and were made of *2.0mm* alloy. For a few years in the mid-1970s **Flat Girders**, like MECCANO but 25mm wide, were listed, 1,2,3,4,5,7 & 10h long.

The **Gearbox Side Plate*** was 147*96mm and made of 4mm perspex; the slots are wide enough to take the Threaded Bushes. Two such Plates were normally held apart by Spacers. These parts were not listed in 1978 but continued to be used in the ready-built COMPACT Demonstration Models.

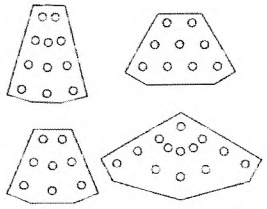


The mid-60s & 1970 Lists contain a 4mm thick **Perforated Plate**, 17*24h, made of Preßspan (composition material?), colour red or blue, called a cladding plate. 12 sizes of 2mm thick alloy **Cover Plates** ranging from 1½*2½" to 3½*10", all with 3 holes at each corner replaced it in the 1993 List. In one of the models shown a similar looking Plate is used as a Gearbox side plate with extra holes in it to take Threaded Bushes.

In the mid-1960s the main additions were **Square Girders** made from a ½" square alloy tubular section, with holes at ½" pitch. 9 were listed from 3 to 33 holes long, and 7 more in-between lengths had been added by 1993. The 9 main **Connectors** used to join them are shown below, plus, at the right, an End Fitting (00.109), & 00.113, described as a 'Connector + Bearing'. Underneath are 3 Hinge Connectors, to allow parts to be attached at an angle, with, to the right, a 'Telescoping Connecting Pair'. These were used to join 2 Girders where a length was needed that wasn't a multiple of ½", as in diagonal bracing for instance. One Girder was bolted to one of the Pair, and the other to the other, but nothing seems to hold the Pair together. Nearly all the holes in all these parts appear to be tapped.

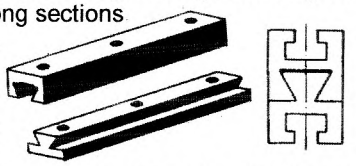



By 1993 the Corner Connectors had been replaced by steel **Corner Cubes** with square section **Tenons**, 17mm long, joined to the Cubes using M3.5 Grub Screws as studs. The small Plates & Brackets could be used to reinforce Square Girder frameworks, & 4 new **Angled Corner Brackets*** had appeared by 1978, which allowed Tubes etc to be joined at angles of 30, 45, 60 & 120°, and to make triangulated structures.



The alloy **U & T-slot Girders** allowed more substantial frameworks to be made. The U Girders had been introduced by 1973 and probably the T-slot Girders as well. The 1T-slot, Angled 2T-slot, & U-Girders all had the usual ½" pitch holes; the 3T- & 4T-Girders weren't pierced but any part with a T-slot could be bolted to a perforated part by Bolts with their heads housed in the slot, and corner joints could be made using the original Brackets and small Plates. It was suggested that the Girders be glued together to give special purpose or very strong sections

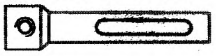
**Dovetail Slides*** were shown in 1970, with the male sections up to 14" long, and the female up to 6½". Both had tapped holes for attachment, probably at 1" pitch. Additional lengths were included in 1978, and by 1993 they had been changed to incorporate a T-slot* for attachment purposes.



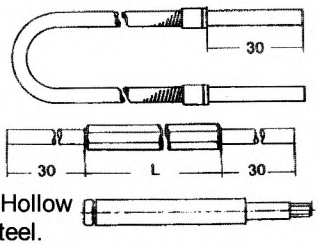
The U & T-slot Girders, and the male Dovetail were available up to 16½" long, but all, including the female Dovetail, could also be supplied in 1m unperforated lengths.

**SHAFTS** All were stainless steel with square ends. In 1961 there were 7 ***4.00mm* Shafts** from 50 to 250mm long. An additional 4 (50-125mm) had a short flat on one end, and one, about 18mm long had a flat along its whole length. A **Sliding Shaft**, had a tapping for a Set Screw, the head of which slid within the slot in a **Slotted Sleeve***. **2.5mm Ø Shafts** were 75, 100, & 125mm long, and would run inside 4mm o.d. **Hollow Shafts**, 40 & 80mm long.

The mid-1960s List contained **Flexible Shafts*** 100, 150, & 200mm long. Also a 4mm **Axle Pin**, about 45mm long, threaded M3.5, with the 4mm end grooved for a Circlip. The short Flatted Shaft wasn't listed.



In 1970 none of the Flatted Shafts appeared, nor the two Sliding Shaft parts, but there were 2 new Shafts, 70 & 90mm long o/a, with 10mm of thread at one end. Also **Hexagonal Shafts***, 6mm A/F, 120, 180, & 240mm long, plus 30mm of 4mm Ø shaft at each end. The Hollow & Hex Shafts were blackened steel.




Additional lengths of 4mm Shaft were included in 1978, plus 8 lengths of **6mm Shaft**, from 50 to 300mm. The Axle Pin wasn't listed but there were two 4 & two 6mm **Threaded Pins**, the latter* stepped down to 4mm at the threaded end to pass through the holes in the Square Girders. They were 57 & 62, and 70 & 90mm long o/a, respectively. There were also 5 lengths of 6mm **Stepped Shaft**, from 50 to 150mm, including the 18mm long, 4mm Ø extension at one end. They were not in later Lists.

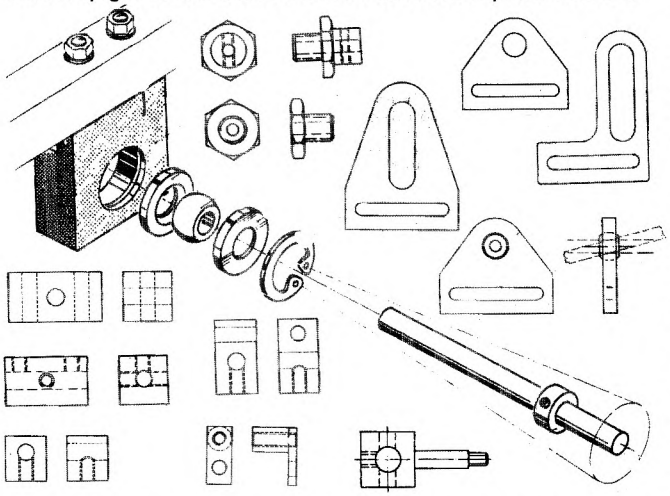
In 1993 15 lengths of 4mm Ø Shaft were listed, from 25 to 250mm, and the 8 of 6mm. All now had grooved ends to take a Circlip. The 4mm Shafts could be used inside 6mm **Hollow Shafts**, 36,50,100,200mm long. Discontinued parts included the 2.5mm Shafts, the 4/2.5mm Hollow Shafts, and the Flexible Shafts.

**BEARINGS** There were a number of different types. In 1961 for 4mm Shafts, **Threaded Bushes** (Long* & Short*, threaded M8, and 3 **Brackets*** to carry them. In 1978 two

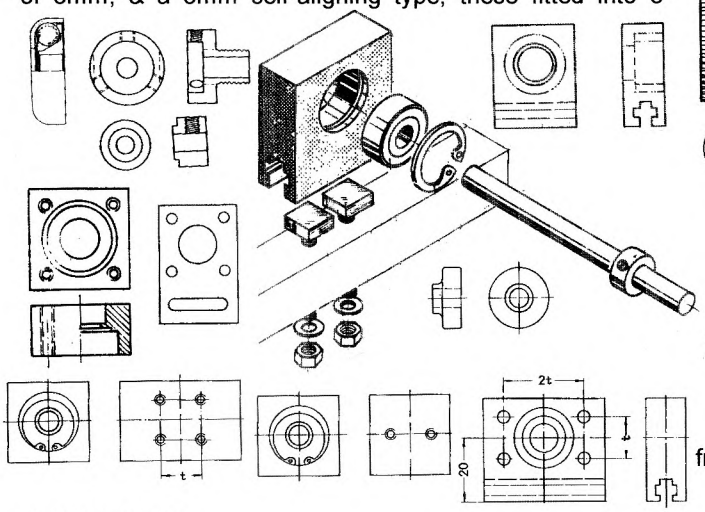
rather similar parts were added but with smaller, 12mm rather than 16mm A/F, hexagons. The longer one scales at 15mm o/a. Also added, a 6mm version with no hexagon and threaded along its whole length, apparently M10 but if so there seems no part in which it could be mounted.

From the mid-1960s, a 4mm **Self-aligning Bearing*** was available, fitted to one of the Mounting Brackets, and for a period from around the mid-1970s a 6mm **Spherical Bearing*** was listed which could be mounted in a standard Bearing Housing* of the time (see beow), held between Special Washers*.

Another type was the **Bearing Block** made of brass and usually rectangular (typically ½" square and less than 1" long) with plain or tapped holes for mounting. Of the 8 in 1961 only 2 were actually called Bearing Blocks, one for 4mm & one for 2.5mm Shafts - the others were all for 4mm. and had names like Connector, Slider, & Support, no doubt indicating their original use. Shown below are the 4mm Bearing Block (top left) & 4 of the others. By 1978 only 3 (block-type ones) remained (with some additional tapped bores), and all were then called Bearing Blocks. Another type had been added by this time, bored both 4 & 6mm*, with a spigot to allow it to be used with the Square Girders.



Finally ball bearings. In 1961 there was a combined radial and thrust **Ball Bearing*** of about 12mm o.d.; it fitted into the **Housing*** shown, which could be mounted in place of the Threaded Bush, and a Special Collar* was used with it. Two additional Housings* with mounting holes, elongated in one case, were shown in the mid-1960s and the Ball Bearing, without the curved thrust face, was described as 'radial'. One of the Housings had different diameter openings on the front & rear face but only one size of Ball Bearing was listed. In 1970 these Housings were replaced by one mounted by Bolts with their heads in an internal X-recess (top right below). In 1978 only Square-headed Bolts* were shown holding this Housing*. 1978 saw the previous Ball Bearing replaced by a different one of 4mm bore, one of 6mm, & a 6mm self-aligning type; these fitted into 5 rectangular Housings. 2 were the 1970 type, one for 4mm and the other for 6mm Shafts. The 3 others were all for 6mm Bearings, and are shown along the bottom row. The 38mm wide one on the left takes a Bearings at each end. New in 1993, a 19mm o.d., 6mm bore, white **Nylon Bearing*** which would fit into all the 6mm Housings, and is shown under the 1978 Bearing assembly.



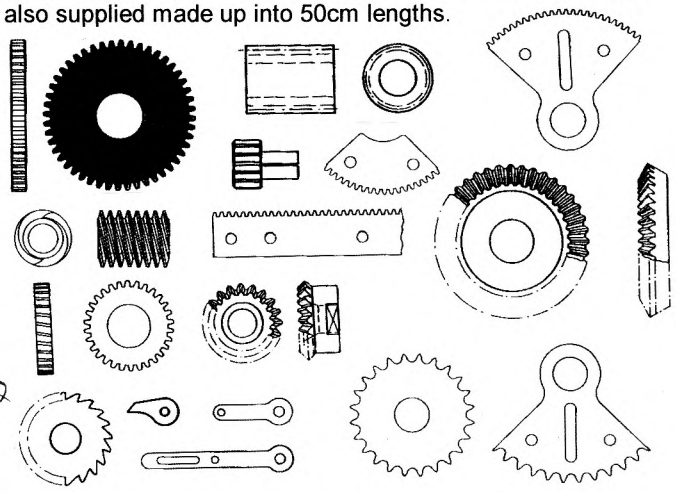

**GEARS/SPROCKETS/PULLEYS** All were alloy, *4mm* wide and bored *12mm* unless otherwise stated. Except as shown, none had holes in their faces. In 1961 there were: an 18t **Pinion***, *15mm* long, bored *8mm*; **Gear Wheels** with 24,30,36,48*,54,60,72,96,108,120t; a 24t **Toothed Sector*** & a 18t **Toothed Segment***, both *2mm* thick. A 12t Pinion* (probably brass) was shown in the mid-1960s List, 4mm bore and held by a Collar over its split end. More Gears were added until in 1978 there were 14 from 24t to 144t, plus by 1993 a 30t & 36t in PVC as well as alloy. 4 **Helical Gears** were introduced in 1970, with 24,36,48t, plus a 36 LH version. All were alloy, 4mm wide. In 1993 their PNs were the same but they were shown with much coarser teeth, and if this is correct a Wheel of about 2" Ø would have 24t instead of the 48 earlier. **Racks**, 15mm deep by 2mm thick, were brass with 25,51*,76 teeth. In 1970 the numbers of teeth were 16,27,54,81, but the 16t one wasn't listed afterwards. In a 1993 drawing of the parts the holes are shown spaced at multiples of ½" but in the 51 & 76t parts to hand 2 holes in each are at 41mm centres. There was also a **Gear Ring** for the Planetary Gear, see later.

2-* & 3-start brass **Worms**, bored 8mm, each running with a matching alloy **Worm Wheel** (*24* & 39mm* o.d.). In the mid-1960s the Worm Wheels were listed as before but the numbers of teeth were given (by overstamping the diameter) as 30 for the small sizes, and 60 & 59 for the larger 2- & 3-start ones. Those to hand are 30 & 50 for both types of Worm. Probably there was a change about this time because in the 1970 list the numbers of teeth were given as 24 & 60, with a new Wheel of 48 teeth for both Worms. These sizes but with different PNs are in the '78 & '93 Lists.

20t **Bevels*** match for a 1:1 ratio, and a different 20t ran with a 40t* for 2:1. All were brass and both 20t types (of about 21mm o.d.) were bored 8mm and tapered to take a Collet Chuck. By 1970 the number of teeth had changed to 24 & 24/48 and the Mod. from .8 to .75.

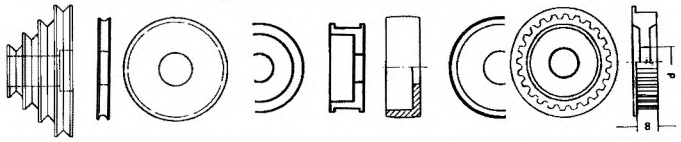
Another toothed part was an alloy 20t **Ratchet Wheel***, *35mm* o.d. (PVC in 1993). To go with it a Pawl* of 20mm o/a, and 2 Levers*.

The 3 **Sprockets** had 12,24*,36t and the 24t was about 40mm Ø. They were probably brass and scale at about 2½mm thick. There's also a **Sector*** shown but it wasn't listed in 1993. The 5mm pitch **Roller Chain** was made up from Links held on the Rollers by Circlips, and a Tool was available to help with assembly. After the mid-60s it was also supplied made up into 50cm lengths.



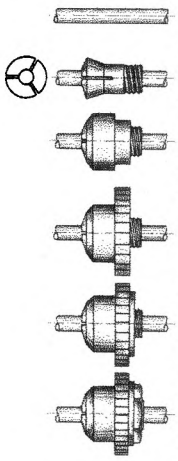
In 1961 **V-Pulleys** were 20,25,30mm Ø, plus a **4-step*** from 20 to 50mm Ø. By the mid-1960s, 5 **V-Pulleys** from

20 to 60mm were listed and the Stepped Pulley had been dropped. In later illustrations the groove is shown rounded* at the bottom. **Flat Belt Pulleys** were 20,30*,40,50mm Ø, and were shown with a curved top* instead of side cheeks from the mid-1960s. Loops and lengths of 3mm Ø and 10*1 mm plastic **Belting** were listed from 1970.

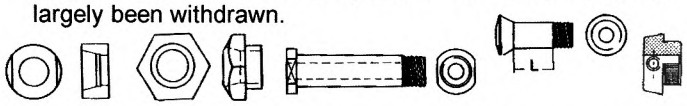


**Toothed Pulleys**, with 12,24*,36,48 teeth, & a DP of 16, were introduced in 1970. The pcd of the 24t was about 35mm. In 1993 the material was given as nylon. Various Toothed Belts of 5mm pitch were listed.

**HUBS** The main way of fixing all parts to Shafts was by **Collets**. The assembly sequence is shown left with first a **Collet Chuck** slipped on the Shaft and then a **Cone Sleeve** pushed over it, followed by the circular part, a Washer & Nut. Different length Chucks & Sleeves were provided to accommodate the different thicknesses of parts, or to allow 2 or more to be held together. A Cone Sleeve without Shoulder* (below left) was used for parts bored 8mm. Nuts (M8) were circular with 2 flats but later hex, 12mm A/F. The round head on the Cone Sleeve was shown changed to hexagonal* in the mid-1960s List, and 2 new lengths added. In the 1970 List all the Cone Sleeves save the 3 shortest had been withdrawn and **Spacers** were used with the remaining ones as required. The only part for **2.5mm Shafts** was a Collet Chuck which fitted one of the Cone Sleeves above. The Chucks were blackened steel, the other parts brass.



**Sleeves** for 8 & 12mm bored parts allowed them to rotate freely on 4mm Shafts, and when more than one part was to be free there were **Loose Hubs***with threaded ends. An alternative part in 1961 through 1970 was an M8 **Threaded Sleeve**, 20,30 & 40mm long - it might be thought to be a bearing except for its length. 2 lengths of **Cone Hub*** were in the mid-1960s List, a part like a Collet Chuck but without the slits, so it simply forms a bush and allows the part bolted to it to rotate freely on a 4mm Shaft. 2 more lengths were added in 1970, when the Loose Hubs had largely been withdrawn.

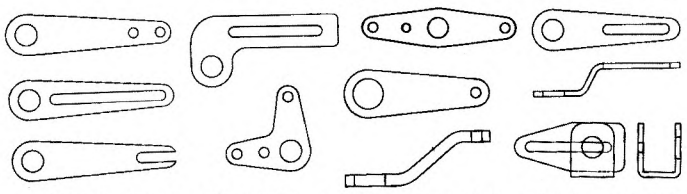


A Cone Sleeve, 2 Cone Chucks, and 2 Cone Hubs were listed from 1978 for use with **6mm Shafts**. The Chucks & Hubs were threaded M10, with a hex Nut 16mm A/F. The 2.5mm parts were no longer listed in 1993.

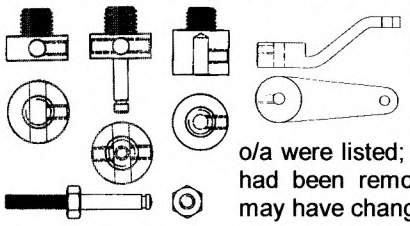
Another part after 1970 was the alloy **Insert Hub*** with a serrated boss which could be pressed into any 12mm bore part(s). It was available for 4 & 6mm Shafts and in all there were 7 different lengths. It appears to be single-tapped and was apparently only intended for lightly loaded parts.

Hubs grooved to allow them to be moved by Stirrups are described later.

**LEVERS** The 9 different types of **Lever** from 1961 are

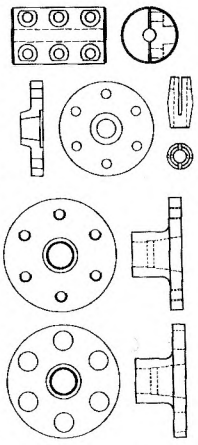


shown above, all of 2mm alloy except the thicker Hand Crank, all flat except as shown, and all except the Hand Crank bored 8mm. The Plain, Slotted & Forked Levers were each available in 7 lengths, with from 20 to 75mm throw. No Forked Levers seem to be in the 1978 List and the 75mm wasn't listed in 1993. Also missing in 1993, the Cranked & 'U' Levers (at extreme right). A **Lever Hub*** was listed in 1961-70, and a similar part with Crank Pin* from '61 to m'60s. In 1961 only there was a Special Hub* for the 'U' Lever. In 1970 a Hand Crank with Hub* was introduced.

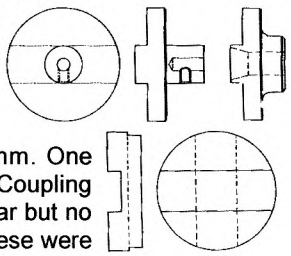


**4 Crank Pins** of from 20 to 35mm* o/a were listed; by 1993 the hexagon had been removed and the lengths may have changed slightly too.

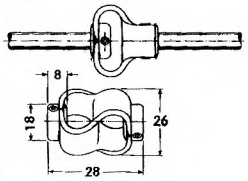
**COUPLINGS** The following were listed in 1961. A **Split Coupling***, 30mm long, held together by M2.6 Bolts & Special Nuts. A **Flange Coupling***, 30mm Ø, with a split Double Cone* to fit the bore. These parts were no longer listed in 1970. An **Elastic Coupling** - two 36mm Ø Flange Wheels with tapered bores, one* with 6 tapped holes to take Special Pins that enter the oversize holes in the other*. No 'elastic' element is listed. A 36mm Ø **Oldham Coupling*** for 4mm Shafts, with single-tapped bosses. By the mid-60s the bore was tapered* to take a standard Collet Chuck.

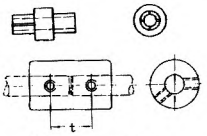


5 new **Couplings for 6mm Shafts** were listed in 1978, with tapped bosses. One was an Elastic Coupling* which could also be used with an Adaptor on 4mm Shafts; it allowed a deflection of 15° and an extension of 4.7mm. One of the others was an Oldham Coupling and the other 3 look rather similar but no details are available. None of these were extant in 1993.

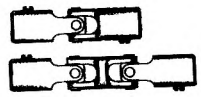


The first 'cylindrical' **Coupling*** was in 1970, for 4mm Shafts: it had thin split ends and the Shafts were held by the pressure of a Grub Screw in a 6mm bore Collar at each end. It was replaced in the 1993 List by conventional parts to join two 4mm, or two 6mm Shafts*, or a 4 to a 6mm. The first was 11.5mm Ø & 20mm long; the others 15mm Ø by 25mm. All were made of brass and were double tapped at 120° for each Shaft.

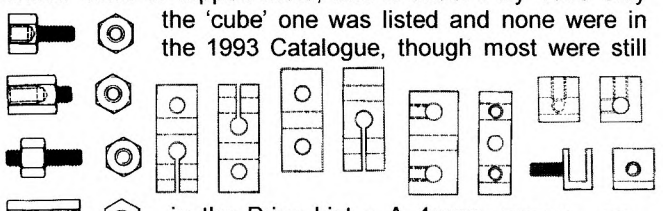


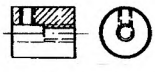
Single* & Double* **Universals Joints** were listed throughout & a slightly modified design with 120° double-tapping was shown in 1993.



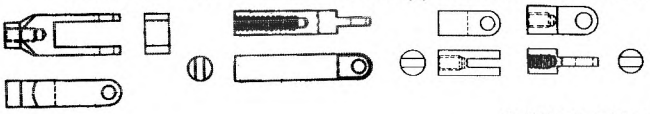
**FITTINGS** **Connectors**. • 4*, all hexagonal in section, for M3.5 threaded parts: the 1st was not listed after the m60s, and the 4th not after 1978. • 4* 'supports' similar to the Bearing Blocks already mentioned, the longest 1", variously drilled 4mm or tapped M3.5, and a Slider*. By 1978 only the 'cube' one was listed and none were in the 1993 Catalogue, though most were still



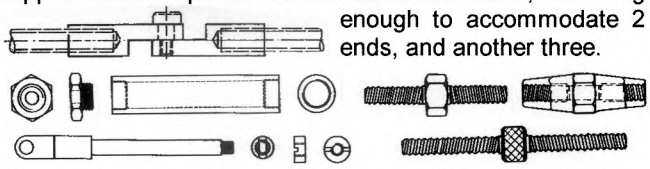
in the Price List • A 4mm: M3.5, 12mm Ø Connector* was listed only in 1970 & 1978.



**Bar Ends**. • The 4 below were tapped M3.5 & the holes



in the forks & tongues scale at 3.5mm. Special Pins, grooved for a Circlip, were provided to fit them. The 2 tongued parts were also available tapped LH. All were listed through 1978 except the longer forked one ('61-m60s), and the LH parts in 1978. • In 1978 & 1993 Ends for 6mm Threaded Rod were shown, one drilled 4mm and the other tapped M3.5*. Special Screws went with them, one long enough to accommodate 2 ends, and another three.



**Turnbuckles** 3 types* were in the 1961 & m60s Lists, also 4 Studs, 30-100mm, threaded RH & LH over 12mm.

**Eye Bolts** In '61-m60s, 5 lengths from 10-50mm, threaded M3.5.

**Collars**, s/t: 10mm Ø (later 8) for 2.5mm Shaft ('61-78); 12mm Ø for 4mm ('61-93), & for 6mm ('70-93).

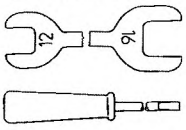
2 M3.5 **Thumb Screws** ('61-m60s), and one in 1993.

Tension and Compression **Springs**,10-50mm long, ('61-93) and various Hangers for the former ('61-78). Also in '61-m60s, a **Spring Housing***, 10mm Ø by 45mm long, with screw-in Ends (bored 4mm* or tapped M3.5), a tongue-ended Piston Rod*, and Piston*.

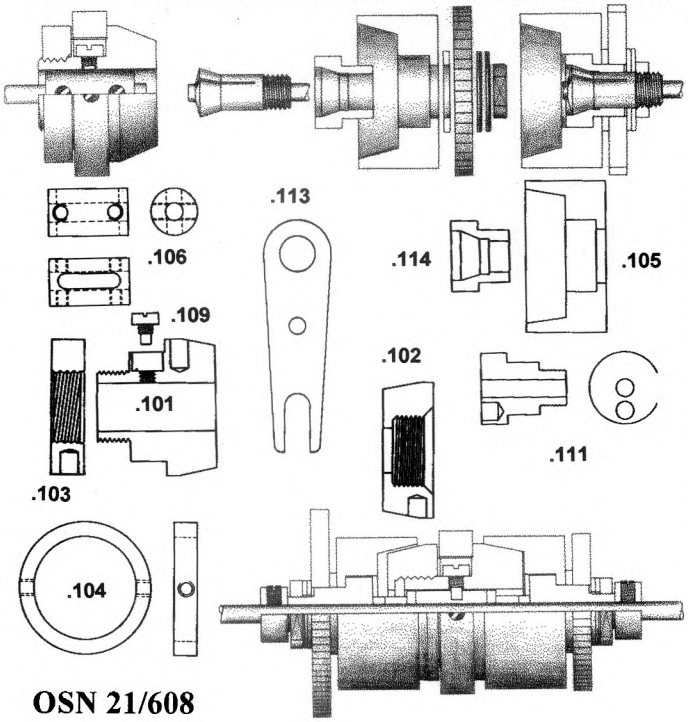
**FIXINGS** The earlier M3.5 CH **Bolts** had slotted hex heads by 1993 (possibly by 1978). Lengths u/h were 5,8,12,15mm in 1961, with 20,25,30mm added in the mid-60s, while the 5 & 15 became 6 & 16mm in 1978, and a 10mm was added in 1993. The standard **Nuts** over the years were M3.5, 7mm A/F; M6, 10mm A/F; M8, 12 & 16mm A/F; M10 & M12, 16mm A/F.

In 1961 7 lengths of M3.5 **Threaded Rod** were available, from 25 to 75mm, and 100mm was added in 1970. M6 Rod, 50,100 & 200mm long, was listed by 1978. **Grub Screws** were M2.6 x 5, & 8mm; M3.5 x 3, 5, & 8mm; & M5 x 8mm in 1961. All but the M3.5 sizes had been dropped by 1970, and by 1978 the lengths had been changed to 3, 4, 6, & 8 mm.

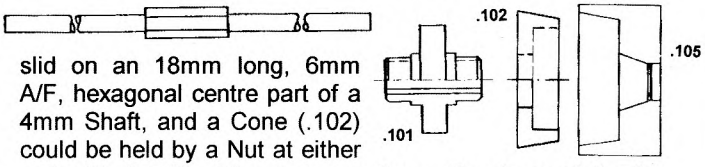
**Tools**. The **Spanners**, of 2mm thick blackened steel, had an unusual shape and were stamped with their size(s) & THE AUTOMAT etc. They had 7/10mm, & 12/16mm* openings, plus a single-ended 10mm one in 1961. 7 & 16mm **Socket Wrenches** were in the 1970 & 1993 Lists. Throughout there were two **Screwdrivers**, listed as 3* & 6mm. The 1993 Catalogue included **Circlip Pliers**.



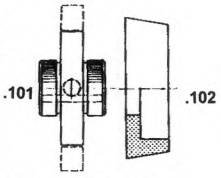

**PARTS FOR MECHANISMS** There were 12 special parts used to make a metal-to-metal, Single or Double **Cone Clutch**. The single version is shown first. Starting with the male end (left), a Special Sleeve (40.106) with a longitudinal slot in it was attached to a Shaft by 2 Grubs on each side. The Cone Body (.101) slid on the Sleeve, located by a Pin Screw (.109) engaging the slot. A Slip Ring (.104) rode on the Body, held by the End Fitting (.103) which was tightened against the shoulder of the Body. Operation was by Clutch Levers (.113) acting on Pins screwed into either side of the Slip Ring. To the right the female side (about 34mm o.d.), showing it partly & fully assembled. It had an Outer Body (.105) and Gear (say) held to the Shaft by a standard Collet Chuck in a Special Sleeve (.114). An alternative Idling Hub (.111) was provided if the female side was to be free on the Shaft. In the Double Clutch the (separate) second Cone (.102) screwed onto the Cone Body instead of the End Fitting, and Collars at each end located the assembly on the Shaft.



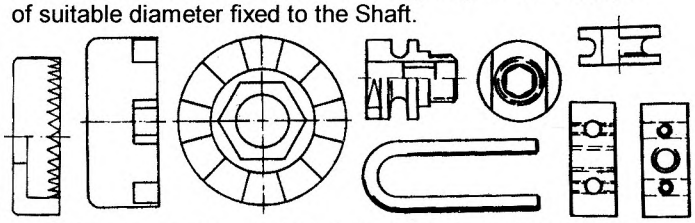

The Cone Clutch had been redesigned by 1970 and the number of special parts reduced to 8. The Centre (.101) slid on an 18mm long, 6mm A/F, hexagonal centre part of a 4mm Shaft, and a Cone (.102) could be held by a Nut at either end with the Slip Ring between them. The bore of the female Outer Body (.105) was tapered to take a Collet Chuck or Cone Hub.




By 1993 (probably by 1978) the design had again been simplified, with a total of 6 parts. A modified Centre (.101) again slid on the Hex Shaft, and the Cones (.102), now PVC, appear to be pressed onto it, with the Slip Ring between them as before. The female Body was also PVC but otherwise similar to that of 1970. The Clutch Lever was no longer listed, and no doubt it had been found possible to replace it with standard parts.



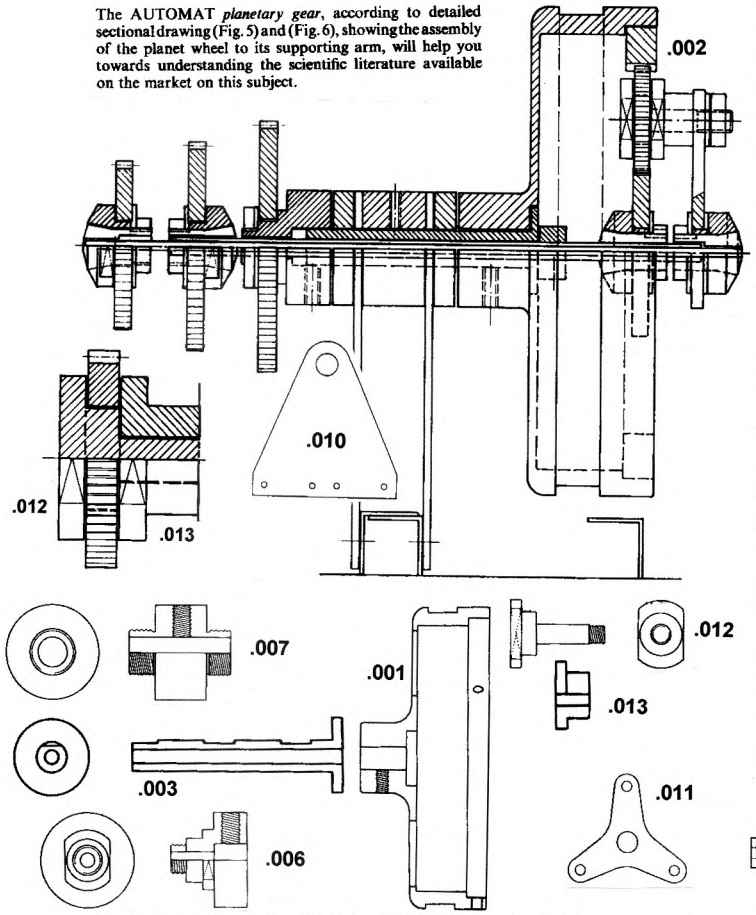

A 35mm Ø **Toothed Coupling*** was listed in 1970; from 1978 on a similar part, but in PVC, was shown, along with a multi-segment **Dog Clutch***, again PVC. Two pairs of these could be used as a 2-way clutch, with a Centre and Slip Ring (on a Hex Shaft) as above to operate them. For a single pair sideways movement of the Slip Ring away from the clutch element could be restrained by any convenient part of suitable diameter fixed to the Shaft.



Other parts were included in 1970 to facilitate sliding movement on Hex Shafts. First the **Grooved Hub***, with a hex bore and a groove to allow a **Stirrup*** to slide it along the Shaft. Alternatively when a Collet Chuck or Cone Hub was being used (on a normal Shaft), a 16mm Ø brass **Stirrup Ring*** could be held against the part(s) to be moved. In those cases the Stirrup could move the whole Shaft with the part(s) on it, or the part(s) relative to the Shaft. The Stirrup was held in a **Stirrup Block*** which was tapped to move along an M6 Threaded Rod. These parts continued in 1993 except that the Grooved Hub was replaced by an (alloy) **Grooved Insert Hub**, again with a hex bore.

13 special parts were used in the 1961 version of the **Planetary Gear** mechanism. The **Body** (21.001, o.d. about 10½cm, with 6 large holes in the face) was fitted with a **Gear Ring** (.002) with internal teeth, but how it was secured isn't clear. A Grub Screw held the Body on the flanged end of the long **Hub** (.003), which ran in the **Bearing**, .007 (supported by a triangular **Support Bracket**, .010, held by

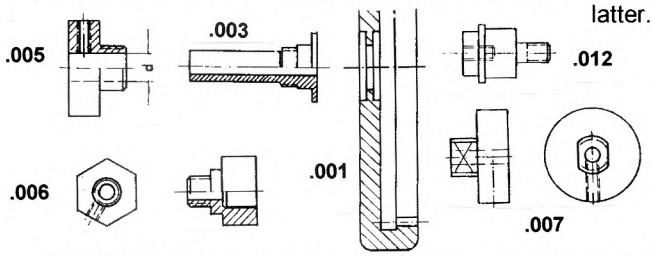
The AUTOMAT *planetary gear*, according to detailed sectional drawing (Fig. 5) and (Fig. 6), showing the assembly of the planet wheel to its supporting arm, will help you towards understanding the scientific literature available on the market on this subject.




Nuts at each end). The **End Piece**, 006, (with a Gear on it) was held to the other end of the Hub by a Grub Screw. A **Hollow Shaft** ran inside the Hub, with a **2.5mm Shaft** inside it. At one end a Gear was fixed to each Shaft, and at the other a Gear was fixed to the Hollw Shaft, and the **Spider** (011) to the 2.5mm Shaft. A planet Gear on each arm of the Spider (also shown in the auxiliary view) was free on a **Planet Hub** (012), held by a Nut against a **Spacer** (013), and engaged the Gear on the Hollow Shaft. The Gears were standard parts.

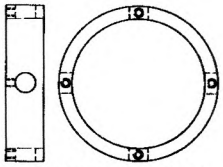
The only change in the mid-60s was that the depth of the **Body** was reduced a little and it is shown without the lightening holes, and already fitted with a gear ring, probably pressed in, that had both internal & external teeth.

Redesigned parts were shown in 1970 with the **Body**, 001, (with only internal teeth) held on the **Hub** (003) by a Nut, and 3 different **Bearings**, 005 with 8mm bore, and with 4mm bores, 004, otherwise identical to 005, and 007. No doubt the Hub ran in the 8mm, and perhaps the Hollow shaft ran in a 4mm at each end, each supported by a Bracket. If so the Hollow Shaft could be locked, like the Hub, if required. The **End Piece**, 006, & **Planet Hub**, 012, were modified too and a Spacer wasn't needed with the latter.

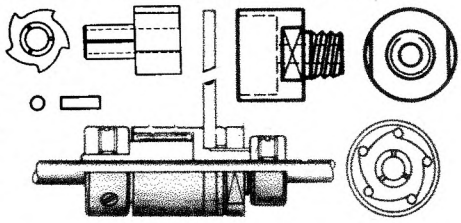



By 1993 (and possibly by 1978) only a **Body**, slightly changed from the 1970 pattern, and the Spider were shown as separate parts. A 3rd PN was for the 'Complete planetary model assembled out of the COMPACT Model Series.' Some data were given: the Body was 96mm o.d. & 15mm deep, with 108 teeth on the internal gear. The planet Gears had 30t and they meshed with a 48t centre Gear.

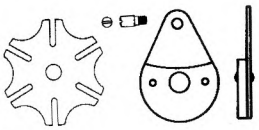
In the 1970 List only, a **Differential Housing*** with a diameter of about 60mm Ø and 15mm deep. Its PN, (25.250), comes immediately after the Bevel Gears.



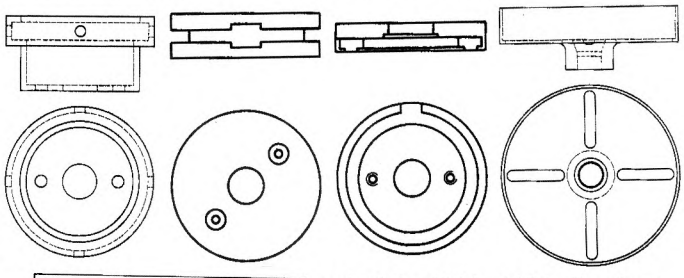
The 1961 List showed 6 different parts for a **Friction Ratchet**. 3 were 15mm Ø **Drums**, each with a spigot long enough to allow one of 3 types of input device to be attached - a Lever or other 2mm thick part; 4mm thick Wheels, etc; & the 18t Pinion. The first type* is shown below. The 5-toothed **Rotor*** had a split boss and was held to the Shaft by a 15mm Ø **Collar** with 3 Grub Screws. Said Collar also prevented the 2mm Ø **Rollers*** from coming out. No changes were made to the parts except that from 1970 the Collar was replaced by the standard 6mm version which had been introduced by that time (with 1 Grub Screw initially). A standard 4mm Collar was used at the other end.

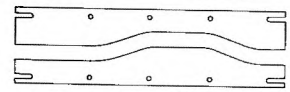


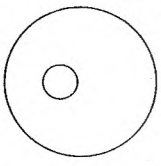
3 special parts were listed from 1961 through 1970 for a **Maltese Cross Mechanism**: an **Index Plate*** about 80mm across, a **Driver*** 42mm long, and a **Driving Pin***.

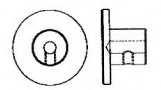


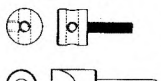
23 parts to make or use with **Cams** were listed in 1961, but only 8 in 1993. 1961. For face (bell) cams, a 50mm Ø **Face Body***, with metal & Preßspan **Strips**, 18*4cm, to shape and wrap round it, held by small Screws; also a ready cut Metal Profile* to work an automatic cone clutch, and, in 1970 only, a wedge shaped Profile. From the mid-1960s onwards the Body had lost its smaller diameter cylindrical extension. A **Grooved Body*** which probably had a recessed groove around its circumference to house the heads of Bolts used to attach the cam profile.

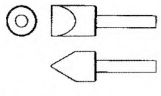


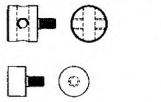


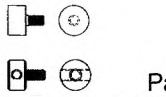


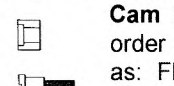


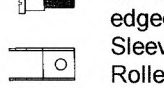


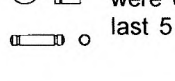










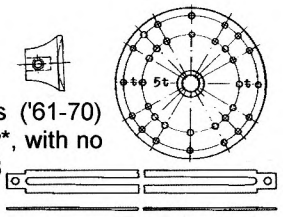


A disc cam could be cut from an 8*8cm Preßspan **Sheet** and attached to a **Disc Body*** with a recessed groove around the face. A **fourth Body***, was said to be for a 'grooved cam'. An **Eccentric Sheave*** of about 50mm Ø, and probably 4mm thick, was introduced in 1970 but not listed in 1993.

Only the Face & Disc Bodies were listed in 1978/1993.

Parts were available to make & mount various **Cam Followers**, and they are shown left in the order they were listed. Their names were given as: Flat faced cam follower; Sleeve for knife-edged cam follower; Knife-edged cam follower; Sleeve for knife-edged cam follower; Roller; Roller with radial threaded hole; Cam roller; Screw for cam roller; Bearing for Cam Roller; Cam roller; Shaft for Cam roller. Most of these were dropped after 1970, and by 1993 only the last 5 were listed (with the final 3 ready assem-

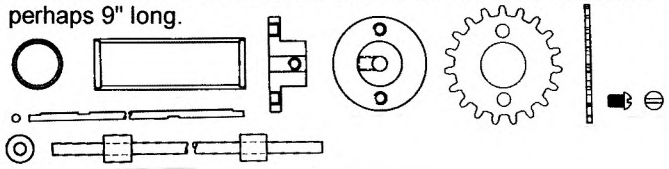
bled), but plus, a PVC, 18mm Ø 'Knob cam-follower'*.

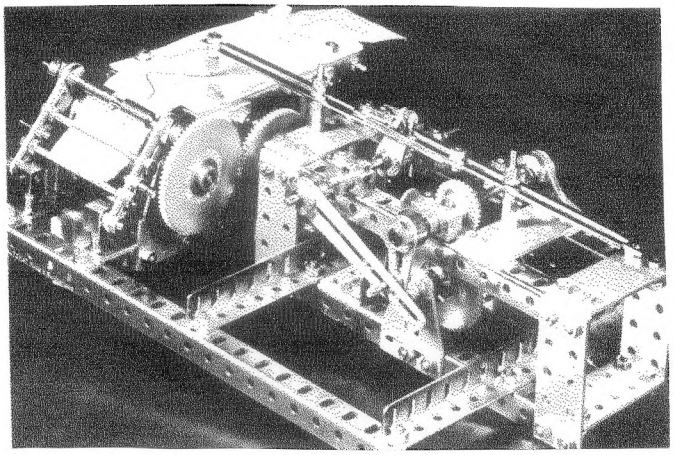


Listed among the Cam parts ('61-70) was a slotted strip called a **Slider***, with no indication of size, and in '70 & '78 only, a 100mm Ø **Face Plate***.

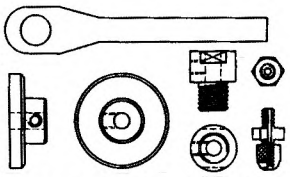


7 special parts were listed in 1961 for a **Chart Recorder**: a **Roller***, 27mm Ø by 80mm long; a single-tapped **Hub*** for it; a 30mm Ø **Driving Sprocket*** with 19 teeth and **Special Screws*** to fasten it to the Hub; a **Special Shaft***; a **Shaft with Rubber Rollers***, and a Roll of **Chart Paper**. The Roller and Shaft weren't in the mid-60s List because other parts in the system could be used instead, and in 1970 the Sprocket had a Hub fixed to it. None of the parts were current in 1993. In the photo of a Recorder below the Pencil Lead Holder (see below) and the Slider (see Cams) appear to be used, and if so the latter look to be about ½" wide and perhaps 9" long.

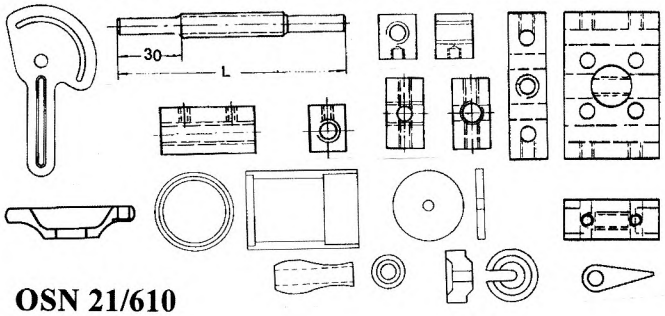




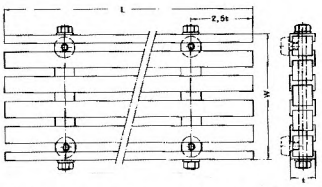
5 special parts for a **Height Gauge** were listed in 1961 & the mid-60s. The main ones were a 25mm Ø **Base***, an **Arm***, 70mm o/a, & a **Sliding Piece***. There was also a **Pencil Lead Holder*** through 1978 (& Leads for it in the m60s).



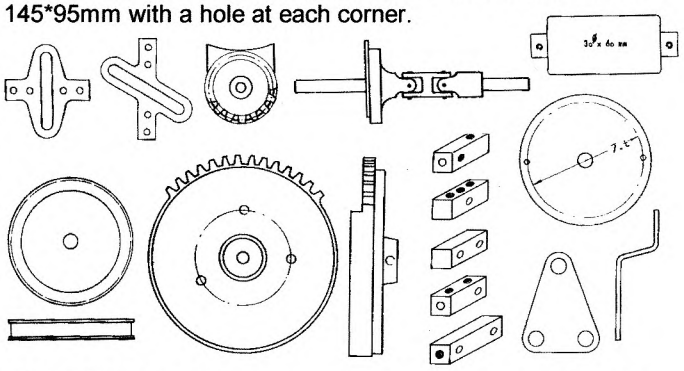
**OTHER SPECIAL PURPOSE PARTS** • 1961-78. A **Gear Quadrant***, 105mm long o/a, and parts to mount Gear Wheels on it, used for the change wheels on a Lathe. • 1961-93. Steel **Lead Screws** threaded M6, 120*,176, 239mm long, including 30mm of plain 4mm shaft at each end. A brass, cube-shaped **Lead Nut*** tapped M3.5, ('61-78); a much larger 1*2½*4cm version* with several plain and tapped holes (m60s-78); a 2,5cm long 'double-cube'* with two M3.5 tappings (1970-78); and another*, 19mm long with the M6 bore across, and an M3.5 tapping lengthwise (1993). • A 50mm Ø **Hand Wheel*** (1961). • A **Drum***, 30mm Ø by 45mm long, with 2 **Ends**, one* bored 4mm, & one 12mm for Collet mounting ('61-78). • 2 nicely shaped, alloy **Handle Grips**, 15 & 26*mm long, with Special Bolts to mount them ('61-m60s), then changed to a 26mm parallel



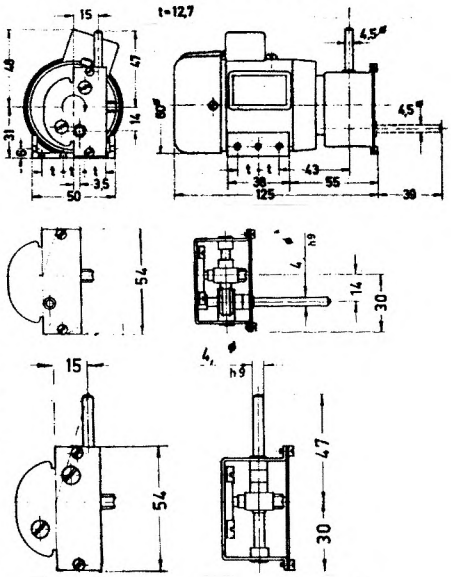

version (1970-78). A **Weight*** ('61-m60s). • **Pointers**, 30*,60,165mm long, coloured black, green, & red respectively, with separate 4 & 2.5mm bore, s/t Hubs ('61-m60s). In 1970, 30,60,120mm Pointers, with (4mm bore) attached Hub, & without Hub; in 1978 none with hub; in 1993, as 1970 but the only one with Hub was the 30mm, and all were made of PVC. • **Dials**: two 360°, 60 & 125mm Ø, & a 180°, 330mm Ø. A **Scale** marked over 10cm with holes at either end. All these from '61 to 1978. • In 1978 & 1993, 9 **Base Plates**, from 2½*6½" to 5*10½", ½" deep, made from 2 lengths of standard U-section Girders, with special I-section Girders between, spaced apart by small Cubes, all held together by Rods with Threaded Ends. (In 1978 the I-Girders look as if they may have been 2 U-Girders back to back.) • In the 1970 List, 2 **Friction Discs** with Hub (23.350/370), 50 & 70mm Ø - like a Face Plates with no holes in their faces.

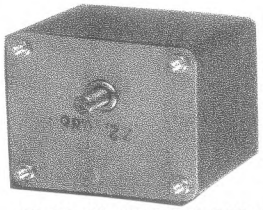


The near-1978 Parts List contained the following parts that were intended for use in the ready built COMPACT models. • The perspex **Gearbox Side Plate** already described but with a central 12.2mm Ø hole. • 2 **Cross Slide Plates*** with slots about 6cm long. • A 112mm long **Hex Shaft** with 5 & 24mm extensions, 4mm Ø. • A **Toothed Body & Gear** with Locking Segment* for an Indexing Drive. • A **Plastic Drum*** 30mm Ø by 60mm long with a tapped boss et each end. • A 95mm Ø x 15mm **Flywheel***. • 5 **Special Connectors** for the Square Girders*, 25mm long except one 43mm. • A 100mm Ø **Face Plate*** with boss and 2x 4mm holes in the face. • A **Triangular Plate***. • A **Wagon Pole*** 140mm long o/a. • A **Cardboard Plate** 145*95mm with a hole at each corner.



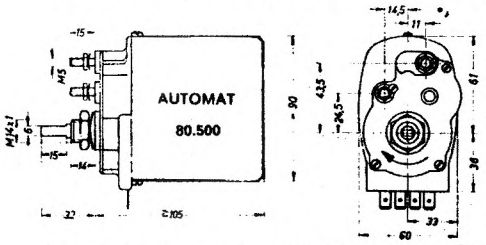
**MOTORS** Two Motors were shown in the mid-60s List, both for '220/110v'. The first*, with Gearbox, is 125mm long, excluding the (4,5mm Ø) output shaft in its alternative horizontal position. There were 12 gearboxes available giving output speeds of 2,4, 6,8,10,15,20,30,60, 120,200 or 300rpm, & the PNs were 80.002 to 80.300. A similar Motor was shown in a mid-1970s List (PN 82.000, 220v, 30W, 2800rpm) with again 12 gearboxes for it (81.002 - 81.300). A Leaflet from perhaps the late '60s, had the same Geared Motor (with 80. PNs), but in one photo the Gearbox was shown without its cover. The 1993 Catalogue showed 2 Geared Motors. The input voltage is again 220/110v, but now whole unit is housed is a



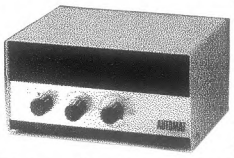


clean, rectangular metal case, and the output shaft is 6mm Ø. The two types differed in size: the 32W Series 83 was 60*50*60mm, with output speeds of 1,2,3,4,6,8,10,20,30 or 60rpm; and the 48W Series 84, 90*68*93mm, with speeds of 20,30, 40,60,80,100,120,200,240 or 300rpm.

The second mid-60s Motor was No.80.500, with a power of '50 W', and its speed could be varied from 1 to 50rpm using a Power Supply unit with regulator, 80.530. Its length excluding the main shaft was 122mm; one output shaft was 6mm Ø, the other threaded M5. A 'Cooling Surface' (Kühlblech) for this Motor, 80.520, 12*20cm, was also shown and it looks like 2 long coils of wire mounted on a plate, with a printed circuit on part of it. A later Leaflet shows the same 80.500 Motor, but another from soon afterwards, and before 1970, shows a later version, 80.600, with a case similar to the Varimat one described below.




2 variable speed Motors cased like the one above, called Varimat, with an electronic control unit 'of advanced digital design', left, are shown in the 1993 catalogue. The input voltage was again 220/110v, and the output shafts 6mm Ø. The two Motors were called V08 & V16, and they had the same size case measuring 115*115* 75mm. Their speed ranges (forwards or reverse) & torques were 3-150rpm/8cmkp for the V08, & 1-50/16cmkp for the V16. Although shown in the 1993 Catalogue, the Varimat Motors are crossed through in that year's Price List, and in a 1995 List are said to be no longer available.

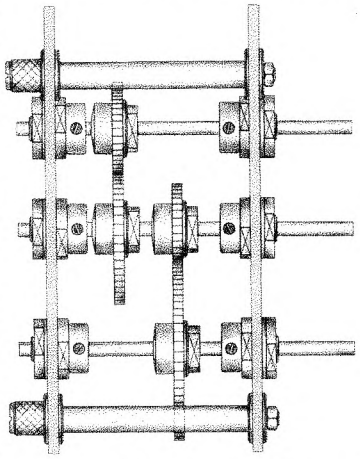


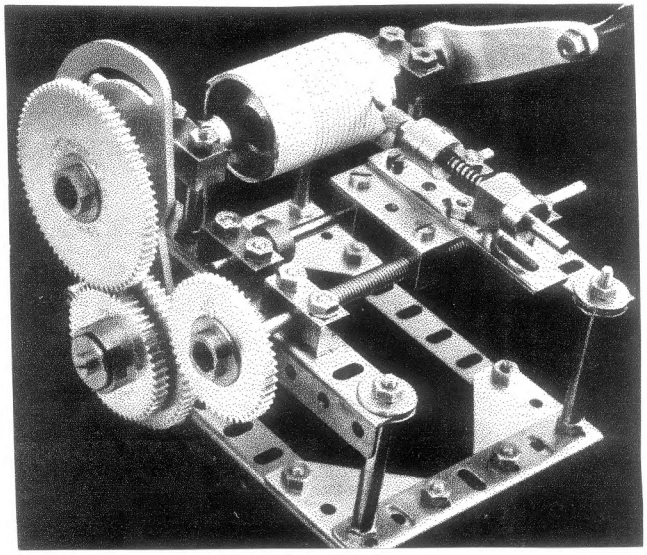
**LITERATURE** A 32 A4-size landscape page **publicity booklet** in English, entitled 'The AUTOMAT Engineering Sets', has a label on it from the 'Sole Agents': **International Engineering Concessionaires Ltd**., 39 Parliament Street, Westminster, London S.W.1, and with it is a letter from them dated Feb. 1962. In the Booklet are details of the 6 Instruction Manuals available: #1. Gears & transmissions; the model lathe. #2. Introduction to automatic machines. #3. Cams, cam followers; introductions to crank mechanisms & physics; the Geneva wheel. #4. Motions of cam mechanisms; more on crank mechanisms; machine elements. #5. Cam-operated lever mechanisms; principles of leverage; the Oldham coupling & other forms of connecting shafts; coupler curves. #6. Applications of cam & crank mechanisms; varying the stroke of cam mechanisms; the crank & the oscillating slotted lever; the drag-link mechanism; recording instruments; calculating velocity & acceleration; the eccentric; the cam-operated clutch.

Notes on some of these topics are given, with mention of some other mechanisms using AUTOMAT parts, such as a planetary gear, and friction ratchet, and photos of many of them. The emphasis is on the elements used in automatic machines and the value of AUTOMAT as a teaching/learning aid. The slogan on the back cover is 'the bridge between theory and practice'. Some details are also given of the Sets: Nos.1, 25, 33, & 1500.

The next item is **6 instructional sections**, home-bound together with an introduction and summary of the system by a firm called **Irwin-Desman Ltd**., of 294 Purley Way, Croydon CR9 4QL. Their words were written after AUTOMAT had moved to Germany and after 6mm Shafts had been introduced, but the 6 sections all relate to an earlier period and bear the Zürich address. Each section has its own pagination but in all there are 88 portrait A4 pages. Sets 1 to 6 are mentioned (though struck through in pencil) and 4 of the sections apply to Sets 1,3,5 & 6, and have titles similar to those of the corresponding Manuals mentioned in the Booklet above. The other two are 'Applications of gear trains in lathes', & 'Introduction to Planetary Gears'.

Each Section has a number of photos, diagrams & drawings of relevant models, with notes on particular features but no detailed instructions. The exception is the Planetary Gear where only a cross-sectional drawing (the one shown here earlier) is provided. Some experiments are described and some fairly elementary theory provided. The tone is quite serious and the work was probably aimed at apprentices. Two typical models are shown below, a simple Gearbox with the bearings located in the slots of the Gearbox Side Plates, and a Demonstration Lathe. An interesting promotional feature was that most of the sections contained some 'Prize Problems', and anyone sending a right answer to Zürich was to be rewarded by a gift of some supplementary parts. An example: What is the module of a gear wheel with 108 teeth and a pitch circle diameter of 81mm?





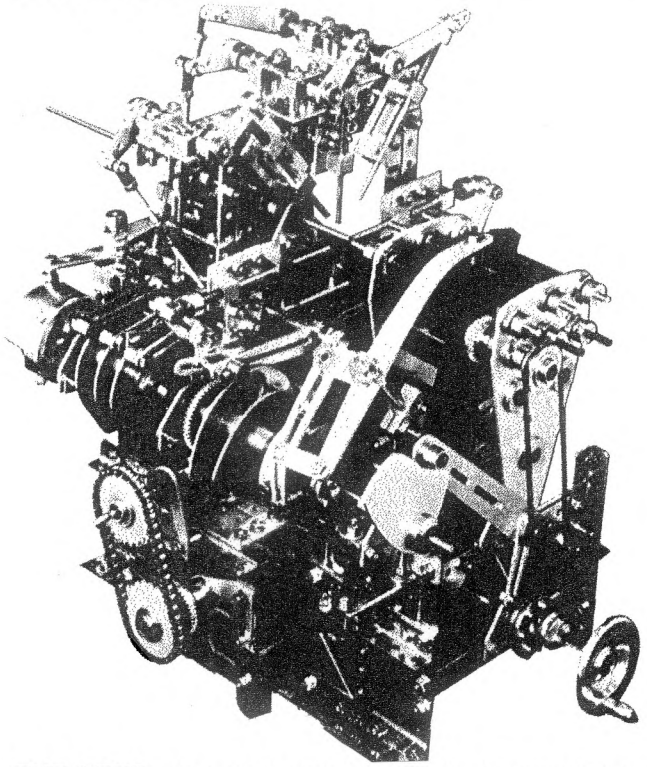
The Irwin-Desman notes mentioned earlier contain some comments on the uses of AUTOMAT, and some emphasis is placed on its suitability for automotive engineering applications, including working models of complete vehicles to study problems of steering, handling, towing, etc.

Next a **manual in French** entitled 'Instructions', and again from the Swiss period. It has 163 portrait A4 pages in all, but in sections as before, and headed Groupe 1 to 7, plus an 'Introduction to Planetary Gear Mechanisms'. All the ground in the English manual is covered but with more theory, and in addition there's a long section on analysing crank/link motion graphically, a section on kinematics, and much more on cams. It's looks to me to be quite advanced material within the topics covered.

The **1993 Catalogue** has drawings of all the parts and also photos of most of them in use in various fairly elementary applications. For example the ways that frameworks and bearings can be constructed, and how Gears and Levers can be mounted. Beyond that are photos of Dovetail Slides and subassemblies sliding on Ball Bearings,

or along Shafts, and some straightforward gear assemblies are shown. There are a few words of advice on getting to know the parts and the general steps needed in planning and building a piece of equipment, but that is all. There is no mention of any other literature.

The literature to hand contains photos of 2 or 3 complex models but not much detail can be seen in them. To give an idea however, one, widely used in early publications, is shown below. The text with it reads, 'This fascinating model of an automatic screw machine was built by us at the request of the Watchmakers' School in Solothurn, Switzerland, for training their young engineers. It took some time and patience to design the machine, but thereafter the various precision AUTOMAT components made the construction a simple exercise.'



**THE SETS** As already noted **Sets 1 to 6** are mentioned in the earliest material to hand, but no details are available. The contents of each set seems to have been linked to the construction of a particular class of mechanisms.

The IEC letter of 1962 gives prices for **Sets 1, 25, 33 & 1500**, and some details of them are given in the Booklet. • **Set 1** had parts to make a simple demonstration Lathe, complete with gear quadrant, leadscrew, & change wheels. • **No.25** weighed 8kg and had 1300 parts, all it is said, needed to make the 50 basic models explained in the 6 manuals included in it. • **No.33** had 2400 parts in 3 trays; it weighed 14kg and was in a box 45*36*10½cm. A summary of the parts is given and they included 42 Gears/Sprockets, 28 Bearings, 40 A/Gs, 142 Spacers, & about 600 NBW. • The **No.1500** was packed in a wooden box measuring 50*308*14cm and weighed 23kg. The parts were in 5 trays in 4 layers. An 8 page Brochure with the above Booklet (or an annex to it) gives a summary of the parts in the Set: 64 Gears/Sprockets, 42 Bearings, 60 A/Gs, 112 Spacers, & about 1400 NBW. The No.1 cost £19, the No.25 £125, and the No.1500 £158; at the time the price of a MECCANO No.10 was about £50.

Also mentioned are **Mechanism Kits** to build specific mechanisms, which would be available 'in the near future'. A list of 15 is given, with more to follow, and they go from M 1.0, Crank & rocker mechanism, to M 4.1 The Maltese Cross (coupled to a dial indicator). The idea was that once built these mechanisms would serve as permanent teaching aids. It was said that some parts would be coloured by painting onto the metal or onto strips stuck on the parts, with green for base parts and red for driven members.

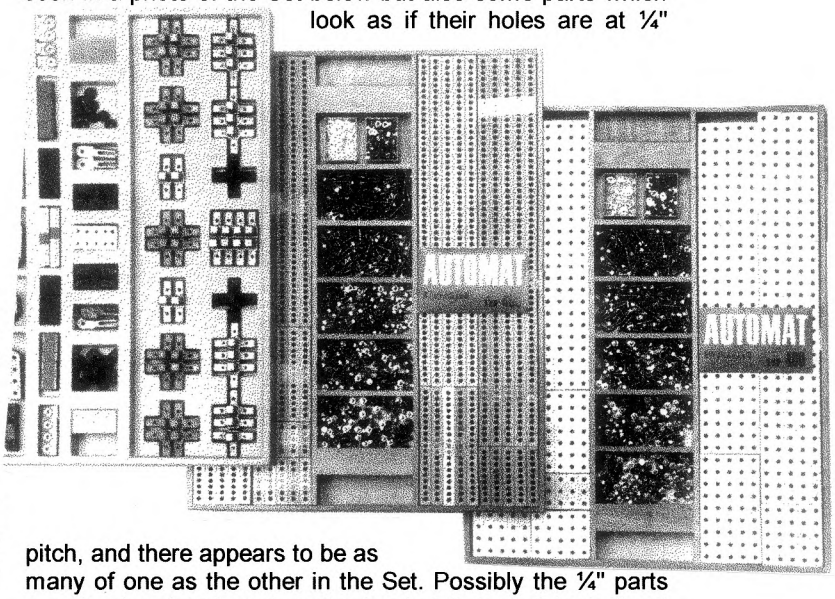
An Automat Leaflet from before the 6mm Shafts were introduced lists **Sets 25,33,1500,1600 & 2000** with their box sizes, weights, etc. The numbers of parts in them are given as 1300,2600,3800,4100 & 5300. A Motor Set '4=12', and the 80.600 Motor are also listed.

A later Leaflet and the Irwin-Desman notes, both after the advent of the 6mm Shafts, say that 4 sets are available, **Nos.25,33,1600 & 2000** with 1260, 2600, 4100 & 5300 parts. An **00.300 Set** containing solely parts to make Square Girder frameworks is also mentioned; elsewhere the contents are given as 52 Girders, 48 Connectors (plus some of 3 other types, if requested), and 100 each of 8, 20 & 30mm N&B, plus Washers, Tools, etc. The **1600** contained Square Girder parts equivalent to those in the 00.300, and the 2000 had a double quantity. All sets were supplied in polished wood carrying cases, and each contained a set of illustrated manuals.

To give an idea of dates, the 1970 Parts List includes wooden cases for all those sets, plus one suitable for 'Set 00.300 and **00.600** and Motors'. Perhaps the 00.600 was a double sized No.00.300.

At this time, and no doubt throughout its life, the Motor Set "4=12" contained 4 Motors and all 12 Gearboxes. Individual Geared Motors were of course also supplied, with whatever gear ratio was specified.

The sets in the 1993 Catalogue are the **401,500,1400, 1600 & 2000**, and all are packed in wooden cases with trays, as before. It is said that the sets contain room to house extra parts. • The **401** contains structural parts, with 3 layers of Square Girders, Connectors (which look ready assembled), Brackets, etc. Standard Square Girders can be seen in a photo of the Set below but also some parts which look as if their holes are at ¼" pitch, and there appears to be as many of one as the other in the Set. Possibly the ¼" parts are simply printed card packaging but it doesn't look like it in the original. • The **500** is called the Profile Kit and contains, in 2 layers, a selection of the U & T-slot Girders, N&B, and various small Plates and Corner Brackets. • The **1400** is the basic structural set and cost twice as much as a 400. The parts are in 4 layers, one with 12 ready assembled Base Plates; one with (blue) Cover Plates, U-Girders, & I-Girders; one with 2 sets of Square Girders and N&B; & the fourth with all the Connectors, Small Plates, and Brackets. No T-slot Girders are included. The I-Girders are not mentioned elsewhere as separate parts. • The **1600** is the basic gear kit with 5 layers of Gears, Sprockets, Pulleys, Bearings, Shafts, Collets, Levers, Couplings, fittings, and special parts. • The **2000** has structural and mechanical parts, this time with 2426 packed in 5 layers. It contains a wide selection of parts including some Square and T-slot Girders, but no Bases or Cover Plates, and probably none of the parts for the particular mechanisms described earlier. It cost about the same as the 1400 or 1600 - DM4400 in



1995, £1500 say, and is said to be intended for technical schools, apprentice shops, inventors and hobbyists. • A **3000** Kit is also mentioned and seems to be just a 1400 & a 1600 in their own boxes. It isn't listed in the 1993 Price List but it is in a 1995 one and costs some 10% less than buying its component sets individually.

**Motor Kits 8310 & 8410** are also shown and are simply 10 of the small Geared Motors, or 10 of the large ones, one for each output speed, packed in a plastic carrying case.

The **1995 Price List** has all the 1993 sets plus various others which are, like the 3000, just a combination of the standard sets at a slightly reduced price. The new ones are the 901 (500 + 401), 1900 (1400 + 500), 2001 (1600 + 401), 2100 (1600 + 500), 2500 (2000 + 500), 3500 (1600 + 1400 + 500), & 3901 (1600 + 1400 + 500 + 401).

Mechanism Kits were mentioned earlier and these presumably led to the ready built **COMPACT Gear Models** which were intended to demonstrate all manner of mechanical movements. The simplest is a belt running over a pair of pulleys with a jockey pulley, and pointers on the shafts to show what is happening. At the other extreme a planetary gear, again with pointers. A pair of the transparent Gearbox Side Plates, spaced apart, form the main structure of the models and many of the components look to be standard parts. 60 of the Kits are listed in MCS under COMPACT SMP, with some small illustrations. They would date from about 1970 when Stock Model Parts (SMP) sold AUTOMAT material in the U.S.A. In 1993 there were 75 Models in all, called the C 62 Series, and all but a few of the 1970 ones have been carried forward with the same PNs.

**USING THE PARTS** David Hobson owns the early parts mentioned in the Introduction and he kindly lent them to me to play with. The main ones were A/Gs, Brackets, Levers, Gears, Threaded Bearings, 4mm Shafts, & Lead Screws with Lead Nuts.

I made a framework and had a 96:18 gear step-up driving a Lead Screw; a pair of Lead Nuts on the latter were bolted to a Rack which meshed with a Gear Wheel. I'd then used up all of the 6 Bearings. The framework was easy to make and perfectly rigid, but the geometry of the A/Gs didn't allow two to be joined at right angles through their round holes, and it was not possible to join three at a corner with 3 N&B. The Bearings were surprisingly easy to line up, partly due to the slightly greater clearance in them compared to the FAC parts, and they were also not quite as long. It would have been easier to mount the Rack if there had been a longer Lead Nut with 2 mounting holes in it, and such a part was introduced later on. As would be expected from such accurate parts, my little mechanism worked smoothly first time.

What to say more generally about AUTOMAT? Comparisons with FAC come to mind but I really haven't adequate experience of either system, particularly in building complex mechanical movements or the heavier types of machinery. This is especially true of AUTOMAT's later parts, which I've not even seen, let alone used.

Nevertheless my overall conclusion about FAC must apply equally to AUTOMAT: any good-sized range of reasonably well designed, accurately made parts would be more than welcome to anyone who needs to make up the types of machinery envisaged by the designer of the system. The literature and the early range of parts seem to indicate that with AUTOMAT the original emphasis was on demonstration models, particularly those relating to automatic machine tools, and other small pieces of machinery. But later on the addition of 6mm Shafts would have allowed more power to be used, and the heavy Girders would have made strong frameworks possible. Comments from anyone who has used the parts would be very welcome.

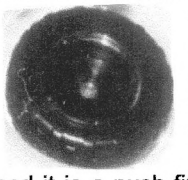
**THANK YOU** to all who have contributed material, including Josep Bernal, Jeannot Buteux, John Hanby, David Hobson, Thomas Keel, Thomas Morzinck, & Geoff Wright.

**MERKUR News** David Hobson was recently able to take photos of some sets belonging to Bill Foote, and he kindly gave me copies. They include No.340, the largest set in the previous range (see 9/213), and two new sets that have been introduced since the notes in 17/484. So MERKUR seems to be alive and well, though I've not heard of it being on sale in the UK. (Is TECC (20/569) still marketed I wonder.) The 'CROSS' name is still prominent on all items.

One of the new outfits is a larger **Motor/Gears Set, No.2.2**. Its box is somewhat larger than that of the No.2.1, but is in the same style, and all the 2.1 parts can be seen, plus more gears and some other parts. The former include another Contrate, another 50t Gear, and 2 more Bevels. The other parts that can be seen are some Axles, a 7h Strip, a few DAS, more than one 5h wide Flat Plates, a 5*5h & one, perhaps two, 5*10h Flanged Plates, 2 Trunnions & 2 Plastic Flat Trunnions, 2 Large Trunnions #2039 (red) & 2 Large Flat Trunnions #3038 (green), and (probably) a 10h A/G and a second Coupling. The front of the Model Leaflet (or Manual perhaps) is similar to that of the 2.1 in layout but shows the Motor driving an output shaft with a 38mm Pulley on it, through a Pinion/Gear reduction, followed by a Worm stage. Apart from Pulleys the 2.2 Outfit appears to contain most but not quite all the parts needed for the Mechanisms in the 2.1 Leaflet.

Before going on to the second new set, a word about the **No.340**. The parts are in 4 trays and sit in the usual MERKUR clear, moulded plastic inserts. The style of the lid and the manual cover is similar to that of the 330 manual in OSN 9, with side views of a more elaborate Windmill driven by a gear train, and a tracked Chassis under it. The 85 & 119t Gears shown are the early 6-spoke design but the ones in the Set are the current type with no cutouts.

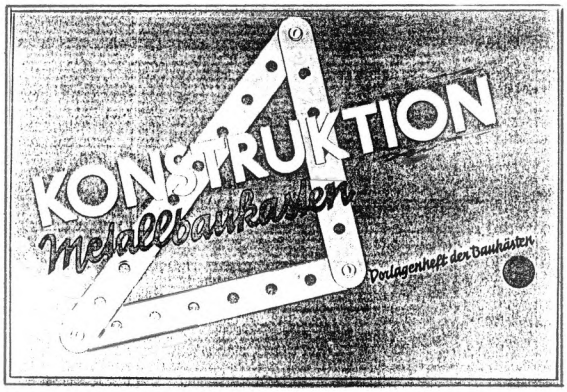
The other new set is the **No.8** with 1405 parts and weighing 6.6kg. So it's appreciably larger than the No.7 and it includes the Motor that is in the Gear Sets, the only regular set to do so. The parts are in 5 trays with inserts, and fit into a box which is probably the same size in plan as the No.6 & 7. It's no doubt deeper to allow a stack of 3 trays on one side with 2, deeper and edged in red, alongside. The models on the lid are those shown in OSN 17 for the No.6, but inset top right is the Mechanism from the 2.2 lid and there's another inset top left but I can't make out what it is. The text is in 12 languages and down the lefthand side are some 20 small flags. All the main parts can be seen including the 5h Braced Girder not in the 340. In addition to the Pulleys/Tyres in the 340 there are 4 new Tyres that scale at 7cm o.d. This part is black plastic and looks to be a



disc with the tyre shape moulded around it (left). The only hole in the disc is at the centre and although a 38mm Pulley would fit into the recess above the disc I can't see how it would be attached. Perhaps the Tyre has a boss behind the disc and it is a push-fit on the Axle, with the Pulley fastened to the Axle by its Set Screw as decor. Colours are as usual except that both parts of the battery Box are black. The 'M3 - M8' on the Manual cover (below) presumably indicates the sets covered though the M prefix isn't used elsewhere. No


details are available as to what's inside. The Tractor is the one shown in 20/569, but now it's pulling a Trailer.

**KONSTRUKTION** To help complete the story of this system, started in 8/181 and continued in the discussion of the early CONSTRUCTION (CNN) manual in 17/489, Werner Sticht kindly sent photos of 3 sets, 02, 03, & 03a, all in the same style, and lent me one of the 3 identical manuals (right) which were with them. With this and what has gone before, it's possible to sketch out the phases of the system. It does rely on assuming the dates that seem to be included in the PRs & Set Codes, but given these the successive stages do seem to be just about coherent.



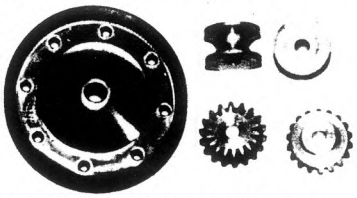

**Before 1954** The original MCS material is assumed to be from a manual from 1954 [The PR (on p3) is N?. Re 101/54 V6/17-10.], and Sven-Ulrich Glage mentioned the likelihood of there being an earlier version in 16/458.

**1954** The MCS entry gives details of Sets 01,02,03,03a, and the parts in them. 03a is an add-on outfit; the other 3 are generally progressive but not in some important respects: for instance there are 15h A/Gs in 01 & 03, but none in 02.

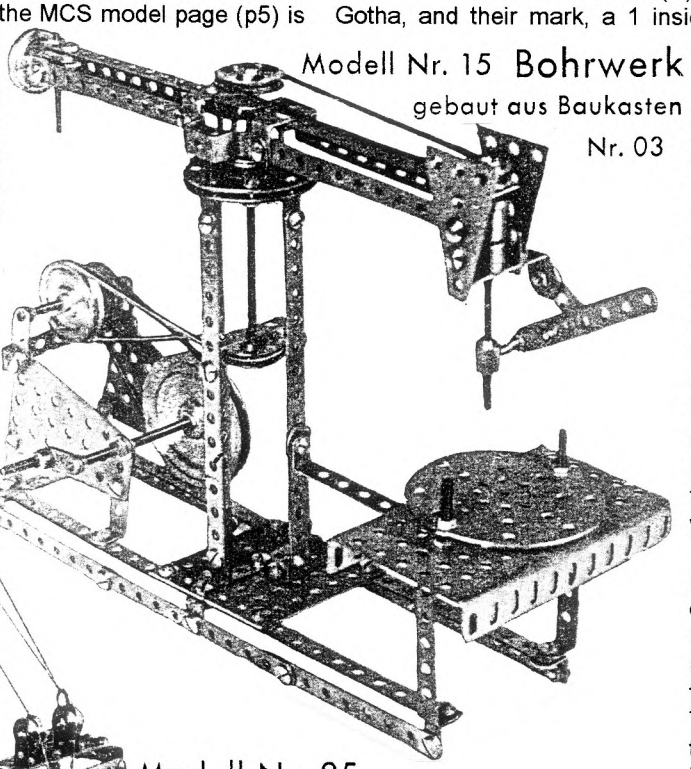
Parts which changed later or were dropped are A/Gs with normal holes & slots; normal 6 & 11h Strips; the 70mm Disc; the 50mm Disc & Face Plate with no slots; the one-piece Crank; the long Spacer Tube (Distanzrohr), #3h; & Pulleys of 20,30,40,60mm Ø with recessed faces that look turned (see 18/498). There is also a part illustrated, 3e, which isn't in any of the Sets, although it is called up for some of the models - it looks like a Washer of between 10 & 20mm Ø. The Russian 'crib' (18/498) had a 15mm Washer. (It also had a long, thin Tube, which like the KNN #3h, was not used in any of the models.)

The manufacturer given on the MCS model page (p5) is Eberhard Rapp of Gotha (25km to the west of Erfurt).

**1957 Sets** Werner's sets all have the reference V/6/6 1544 Re 1657/57. Many of the parts mentioned above have been dropped or changed to the CNN pattern: thus the A/Gs, 6 & 11h Strips, and 50mm Disc & Face Plate have long slotted holes; the Crank is made from 2 pieces; the 4 'turned' Pulleys have been replaced by a 16mm Ø aluminium Loose Pulley (below), and pressed ones of about 40 & 60mm Ø. The Spacer Tube has probably gone too, but the 70mm Disc remains unaltered. The Bevel, below, has 18 teeth and a very short boss (it would be held on a Threaded Rods by Nuts). It, all bosses, and the Collar, look as if they are aluminium. Along with some TRIX, there was the mystery Pulley (right) in one of the Sets when Werner acquired it. It has no boss and scaling from a photo it is 45-50mm Ø; the centre within the 8 holes seems to be conical.



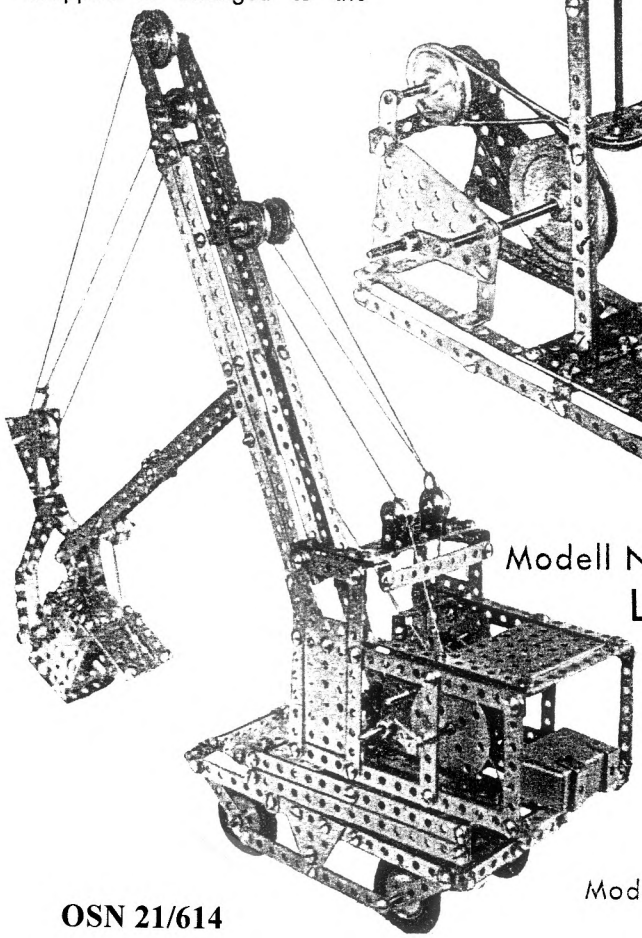
The Sets are in partitioned boxes, 315*212*24, 390*259*24 & 318*262*24mm for #02, 03 & 03a. All are blue inside & out, with similar large labels on the lids, and red card boxes for the small parts. The labels show 2 models on a yellow ground blending to a light blue or purple on the left, with the wording KONSTRUKTION METALL BAUKASTEN FÜR DIE *Jugend*. The models are a #3+3a Racing Car, & a Digger, with a derrick-style post & jib, which isn't in the Manual. The maker is VEB(K) Technische Werkstätten Gotha, and their mark, a 1 inside a triangle with 37/257/5804 underneath, is at top right on each label.



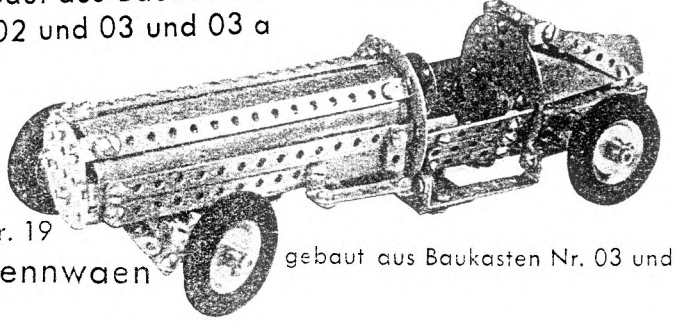
Modell Nr. 15 Bohrwerk
gebaut aus Baukasten Nr. 03

**1959 Manual** The PR of the manuals in Werner's sets is Re 299/59 V/6/17-10. So what about the Sets being 1957? Perhaps the /XX indicates the year in which the article was first produced rather than the year of production. In that case before 1959 an earlier manual must have been used, and as will be seen, it would have been perfectly possible to use the 1954 MCS manual with the 1957 sets.

The Illustrated Parts page hasn't changed except that the PNs have been removed from the parts that are no longer in the Parts List: the Spacer Tube & a 90mm rod with threaded ends called a Piston Rod. The 'turned' Pulleys and the 'pre-slot' Discs and A/Gs are still shown and numbered.



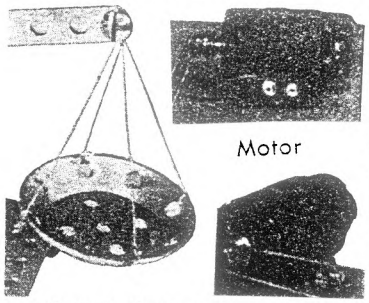
Modell Nr. 25
Löffelbagger
gebaut aus Baukasten
Nr. 02 und 03 und 03 a



Modell Nr. 19
Rennwaen
gebaut aus Baukasten Nr. 03 und 03 a

The main changes to the Parts List are that the 6 & 11h Strips are marked as 'Slotted', and 2 Rods with Threaded Ends, 95 & 120mm long, are introduced to replace the 90 & 120mm Threaded Rods, & the Piston Rod. All the MCS Pulleys are still included except that the 20mm is now 16mm Ø. The Set Contents show a few minor changes, the most noticeable being the deletion of the two 15h A/Gs from the 01 Outfit.

There's a single photo of each model with the Parts Required for it, inadequate for the larger models given that no instructions are given. The models are probably all the same as in the MCS manual: there are the same number, the parts required for them are identical, and the models on p9 are identical to those on the MCS/NZ p5. None of the modified parts can be seen. One has an unusual and unknown part as a scale pan (far left) - a pre-1954 part? Two models are driven by the Motor (left) which, though indistinct, doesn't look like the one in the MCS Gears Set. It looks cylindrical, mounted on a base with 2 terminals on the side. The Drill & Racing Car at the bottom of the facing page are made from Sets 03 & 03+03a respectively. The Digger, the last model in the Manual, needs Sets 02+03+03a, and is similar to the one on MCS/FB p5, but without any of the long slotted parts that can be seen in the MCS version. The latter came from a later manual, but its PR isn't known.




SUMMARY OF MANUAL •Name: KONSTRUKTION Metallbaukasten •Details of maker: VEB(K) Technische Werkstätten Gotha. •Dates &/or Ref Nos: Re 299/59 V/6/17-10 on p12. •Page size: 211*297mm deep. •No. of pages: 12 inc covers. •Language: German. •Printing: B&W ½-tones of models, parts; blue cover with red border (at top of facing page). •Page No. of Parts List/Set Contents & highest PN: 12,15b (Illustrations on p2). •Sets covered: 01,02,03,03a. •No. of models for each set: 3,10,5,1,5(03+03a),1(02+03+03a). •Name, Model No., Page No. of first & last model of each set: 01: Säulenkran,1,3; Dreirad,5,3. 02: Dezimalwaage,3,3; Fahrbarer Drehkran,11,5. 03: Torkran,13,5; Windmühle,24,9. 03a: Motorrad,20,8. 03+03a: Exzenterpresse,16,7; Luftschaukel,23,9. 02+03+03a: Löffelbagger,25,10. •Other notes: •The parts for each model are on p11. •No.19 on p8 is misspelt Rennwaen.

**A Later Set** This is the #02 described in OSN 8. The parts in it look to be just like those in the 1957 #02, and are, with minor exceptions, just like their CNN equivalents.

The bottom of the box is a dark colour outside and yellow inside; the top is half yellow and half blue with a large photo of the later Digger, and KONSTRUKTION in white on a red rectangle, followed by METALL-BAUKASTEN in black on the yellow. The style and italic letters of KONSTRUKTION are identical to those on the cover of the Gears Set manual shown in MCS/FB, p2. The Set No. is on the side of the lid.

**The Last Sets, from about the mid-1960s** These are the ones illustrated in the CNN manual described in OSN 17, with /67 in its PR. They are thought later than the #02 above because of the plastic packaging. The lids of the 3 standard sets look (in B&W) identical to that of the #02 above, except that the Set No., 01, 02 or 03, follows METALL-BAUKASTEN. The Gears Set has KONSTRUKTION in the same style but it is followed by METALL-GETRIEBE *Baukasten*; and 2 models, the rear of a Chassis & most of a Mobile Crane, are shown inside the 2 largest of 3 'gears', rather like those on the cover of the CNN manual shown at the bottom of 17/489.

It has been suggested that from early in the 1960s the system was produced at Schmerbach, by VEB Metallwaren Schmerbach, but the date of this changeover is discussed below.

**An Early CONSTRUCTION Set** After writing about KONSTRUKTION it was interesting to see, courtesy David Hobson, a CONSTRUCTION 01 Set, which was probably made soon after the name was changed.

The box measures 35*23½*2cm and the base is red, with a yellow moulded plastic tray for the parts. It is very similar to the illustration of the KNN Set in the Set's Manual but the Angle Brackets are housed slightly differently. The Strips sit up at 45°, like those in the card partitioning of the KNN Set in OSN 8. The N&B, etc are in 2 round yellow plastic boxes with lids to match. The box lid is exactly like the OSN 8 KNN one, except for C's instead of K's in the name, and 01 after it instead of METALL-BAUKASTEN. Again the layout of the Set (as per the picture in the Manual) is printed on the inside of the lid.

Now the noteworthy points about the parts. • The slot of the Angle Bracket, 51, has rounded ends, not square as shown in 17/489. • The Distance Piece 30 in OSN 17 has not yet been supplanted by the tapped Collar. • The Tyres have KONSTRUKTION moulded into both walls. • Most parts are in the thicker metal of the day, the 1.1mm thick 20mm Discs caught my eye. • The Screwdriver is the normal CNN type with a hexagonal section plastic handle, instead of the wooden one in the illustrations. • The Spanner is the CNN shape but the throat of the opening is semicircular, and the hex opening at the other end is 'rotated' slightly.

The manual is identical to the 17/489 one except that it's in German, English, French, Spanish, & Dutch; the PR is Re 50/66 V/6/17-10, so a year earlier than the other; and the maker's name isn't on the cover (or elsewhere in the Manual, or the Set). This last might be thought to indicate that the change of manufacturer to VEB Schmerbach occurred in 1966-67, but as already mentioned it may have been earlier.

Following the note in 18/497, Werner has written that it was in 1975 that production of CONSTRUCTION passed to VEB Pfaffschwende.

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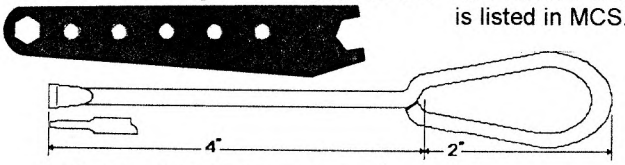
**Another ONADO Set** Don Blakeborough kindly sent notes on some parts that he has acquired, complete with the Manual described in 15/405, and an end opening, card, N&B box. Said box (left) measures 2¼*1⅜*¾" deep, and also has ONADO on the sides & ends. Don thinks the lot may be most of a No.3 Set, and I can pass on the list of parts that he sent to anyone interested.

The parts seem to correspond to the blue & red ones of OSN 15 except as follows:

- The red Balloon Wheels are 1.9" Ø and ⅜" thick.
- The Axles are again 4" long, plus a 2" one. Neither size is listed in MCS.




- Don's Screwdriver (above) is wire. His Spanner is just like the one (above) that belonged to the Bob Curling parts, but which wasn't available earlier. It is rather like the UMAKIT one (see 13/339), but has a hex opening at the narrow end instead of the end hole, and the outer shape is not quite the same. The open jaws admit a 5/16" nut but the ring is only a little over ¼" A/F. It measures 3¾" o/a, and looks as if it may have been nickel plated.
- Among Don's parts were 36 Nuts, 5/16" A/F, and various Bolts comprising: 15 CH & 13 RH, 9.5mm u/h; and 2 CH & 2 RH, 6.5mm u/h. All the Bolts are commercial looking, and plated but not polished, Don found that the thread of the N&B, and in the boss/Collars, isn't 5/32" BSW. One of the longer RH Bolts was found in the boss of the 1" Pulley and was partly red, as if in situ when the part was painted.

Don added that he had also found some more Chassis (Flanged Plates) in his 'unknown' box, together with a 15h 'L' Section Channel, painted blue with square corners.

**An EPA No.8 Set** There is an EMA from Greece in MCS but the name on its manual cover (opposite) is ΕΠΑ which transliterates as EPA. The cover also has 'No.1' on it, and 3 Greek words with their equivalent in French: Jeux de Constructions Métalliques. As well there is a partly built model made of Strips that look like ERECTOR, but the hole spacing is given as 12.5mm.

The present set, kindly loaned by David Hobson for this account, has the same logo on the lid, plus '8', the French phrase above, & ΜΕΤΑΛΛΙΚΕΣ ΚΑΤΑΣΚΕΥΕΣ, words which are similar to two of those in MCS, and are related to 'metal' & 'construction'. The parts in the set though are not in the least like ERECTOR - most are MECCANO or MÄRKLIN pattern but their hole spacing is 12.5mm. So perhaps the EPA system changed over time or perhaps like ERECTION (see 16/434), some sets had one style of part and some another.

There is no manual with this No.8, and though obviously incomplete it contains a number of original parts, including some 'aero' pieces which may well have been part of the set, and a pair of what may be the Mystery Part No.22 Braced Girders (see 10/259). Some of the parts are of rather thin steel and some aren't well made; another striking feature is that the parts are painted in 9 different colours.

The **box** measures 49*31*5cm and the full colour lid is in various shades of orange, with concentric rings of colour around a model Stamping Press, set on a pale blue ground. 3 other small models are shown in similar circles with one orange ring around each. The parts are in a yellow moulded plastic tray, & there would have been an upper layer originally, no doubt in a similar tray. Some red plastic headed pegs in the box probably held some of the parts in place.

**The Parts** • DATA (in mm) STRIP (11-hole): •hole pitch/dia, 12.5/4.3; •width, 12.7; thickness, .9; •ends, near fully radiused. BOSS: •brass; •o/d, 9.0; •i/d, 3.73±.07; •single tapped. THREAD: 5/32" BSW. AXLE DIA: 3.39. Mod: 1.0. NUT: hex 8.0 A/F; BOLT: cheesehead 6.9 Ø; both iridescent steel.

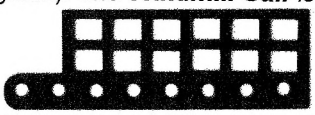
The various parts found are described below. All holes are round unless otherwise stated, and many are 4,4mm Ø rather than the 4.3 of the 11h Strip above; as usual M denotes a MECCANO part, with K for MÄRKLIN, using their prewar PNs.

• **Strips**: 25h (light blue), 11h (green), 7h (blue), 5h (light blue-grey), 3h (orange). An 11h **Circular Formed Strip** (green). A **Curved Strip** virtually the same as K110, with the same 33mm long slot (green). A 1*5*1h **DAS** (blue).

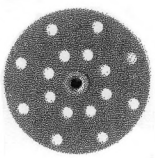
• 11 & 25h **A/Gs** with .7mm thick flanges, 13 & 14mm wide, and square corners (red).

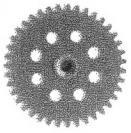
• **Flanged Plates**, all with square corners. 5*11h as K52 but with slightly shorter, 7mm, slotted holes (red). 5*7h (light blue-grey). 3*9h flanged on the long sides (green). A 8h long **Flanged Sector Plate**, flat across the ends, with the end of the flange normal to the top face at the 5h end, but cut back by 10° at the 3h end (light blue).

• The **Braced Girders** are very similar to Mystery Part 22 but at 42mm are slightly less wide, and the transverse hole pitch is 30mm (1 red, 1 green). The **Windmill Sail** is made from the same tooling (1 green, 1 blue, 1 light blue, 1 red). One is 1mm wider than the others and if a Braced Girder was similarly widened on both edges it would almost match the width of Mystery Part 22.



• **Circular parts**. All are made of thin metal, typically .8mm thick. The bosses are about 8½mm long with rectangular section peening and the mouth of the bore chamfered. Several of these parts are very badly made with the bosses off centre and the pulley halves not drawn closely together on the boss. A K67 **Flanged Disc Pulley** but the flange is only 6mm wide and the holes in the face are round (black). In all the other parts to be described which have a ring of 8 holes, the pcd is 20mm, even though there would have been room for them at the 12.5mm spacing. A **Face Plate**, 49mm Ø has such a ring of holes and an extra ring at 40mm pcd, see right. (olive drab). A 38mm Ø **Bush Wheel** with 1 ring of holes (light blue-grey). A **Pulley, 37mm o.d,** with 1 ring of holes, and about 6mm wide across the groove (grey). A similarly wide **28mm Pulley** (red) fitted with a black rubber **Tyre**, 38mm o.d. A **Gear Wheel** (opposite) pressed from 1mm thick steel, 41mm o.d., with 39 teeth, & 1 ring of holes (green).



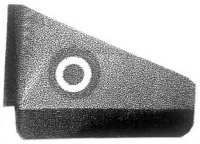


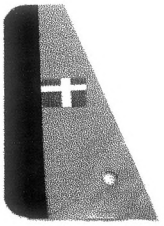
• **Brackets**. A **Flat Bracket** with a 7mm slot, 26mm o/a; this part made into an **Angle Bracket**; and a **Double Bracket** 13½mm wide (plain steel or bright tin plate). A **2h Double Bracket** (M11a) (black).

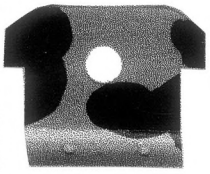
• Bright **Axles** with sheared ends, length 32, 65, 98, 133, 158mm. They are very loose in the holes but the bosses run quite well on them. The **Crank Handle** (right), 150mm o/a.

• The pressed **Nut** is 2.1mm thick, and the **Bolt** 8mm u/h. The **Set Screw** is like the Bolt but 6mm u/h.

• The **'aero' parts**. A pair of tapered **Wings**, each 140mm long, and angled down at the leading and trailing edges to give camber. The 5 holes in it, the stencilled F-105, & the blue/white/blue stuck-on roundel can be seen right. Also a half **Tail**, 60mm long with a flange inboard, and below that a **Fin** 71mm high. These parts are grey with black trailing edges. At first sight they might not be thought part of the Set but in addition there is an equally 'unlikely' piece, the part below the Fin, sand yellow with black camouflage markings, that could be an **'Army' part**, and it just fits into one of the moulded compartments in the plastic tray, with a separate pocket at each side to accommodate the lugs. So perhaps originally there were a number of army parts , and aero ones as well. Also in the box, two white plastic **Hubs**, 16mm Ø, fitted with 26mm o.d. **Tyres**, which are a loose fit on the Axles.

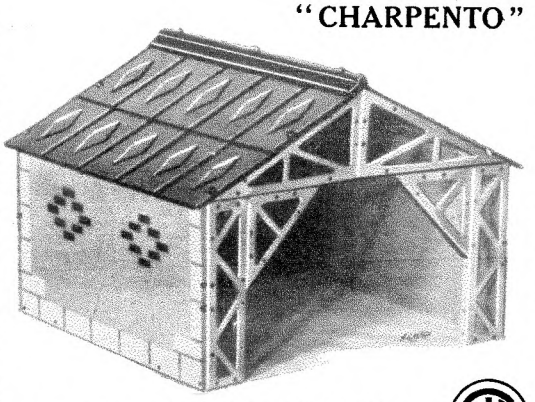


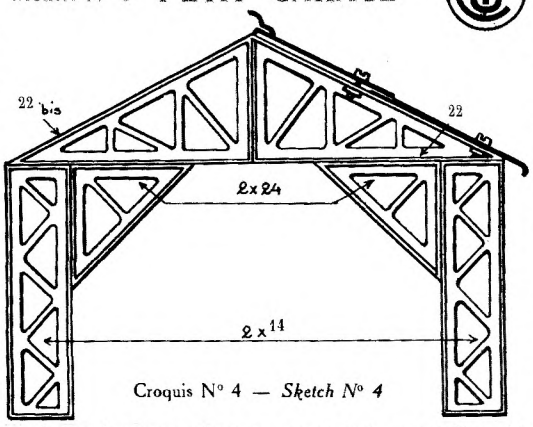


• A few other parts can be seen in the models on the lid: a **Collar**, like the boss; a **Hook**, probably flat; and a yellow plastic seated **Man**, wearing a black cap. Also a 5h high **Cylinder**, sitting on a K67 Pulley, that has no holes in it and looks as if it is made of card or sheet plastic.

To give an idea of the **size of the Set**, as found it contained 3x 25h & 4x 11h A/Gs, 20x 5h & 18x 11h Strips, and 3x K67 Pulleys. The **models** on the lid don't in any way do justice to the size of the Set but the largest of them is shown below since nothing else is available.

**CHARPENTO** This is a French set to make structures, with Half-Trusses rather like the STEEL WORKER in 16/449, but smaller, 15cm long at most, and with parts for walls and roofs too. The name brought to mind charpentier, the French for carpenter, but the dictionary also has a closer word, charpente, meaning 'frame(work) or framing'. For these notes David Hobson kindly lent me his set, complete apart from the Screwdriver and one or two small parts. The material in MCS matches exactly part of a booklet & a leaflet found in this Set. A 'Box No.1' is mentioned in them but the box itself has no indication of set size & it isn't known if other sets were made. No precise date is known for CHARPENTO but it is said to be from the late 1920s, in which case it would have come before STEEL WORKER. A patent is claimed but no details are to hand.



Croquis N° 4 — *Sketch N° 4*

Several of the main parts can be seen in the Garage above - one of the 5 lengths of (Braced Girder style) Beam (5 to 25cm), 4 of the 8 types of Half-Truss (2 RH & 2 LH), the Roof Slab, & the Wall Plate. The only major type of part not shown is the Flange (base) Plate. Most of the parts are shown in MCS but not all, and some details may not be clear.

**The PARTS** The holes are usually 2.5mm Ø but a few are up to 2.7mm. The basic pitch is 12.5mm but usually there are 2 or 3 holes at that spacing, separated by multiples of up to 75mm. However the spacing on the hypotenuse of the Half-Trusses is often irregular, with non-standard gaps between pairs of holes, and 5 holes at 6¼mm pitch on the 2.5cm Truss. I haven't discovered the rationale for all these variations. Another exception is the Stiffener (2*4h Plate), which is often used to join parts end to end, and has the crosswise holes at 6mm pitch.

The **Beams**, **Trusses** (I'll omit the 'Half-' from now on), & **Angle Irons** are of .35mm steel, but the **Stiffeners** are .5mm thick. All these parts are painted silver. The Beams & Trusses have 5mm flanges on all sides, and the Angle Irons are 5*5mm. The 10cm side Truss with 45° angles is wrongly shown as 15cm in the MCS List. The Beams are 25mm wide and the Stiffener measures 45*11mm.

The **Flange Plate** is 20cm long by 6.5cm wide and the long edges are formed over into the section opposite. I can't see the purpose of the 4 narrow 4mm long slots along the centre line of this part. The 4 holes at each end match those in the Connecting and End Plates, both of which are about 30mm wide, and neither have the bottom 3 mm wide flange. All these parts are painted grey.

The **Roof Slab** has 5 panels with an impressed diamond in the centre of each, not the 3 shown in MCS. It is 204*61mm o/a, painted red, and has one hole at each end to allow it to be bolted to a Truss. The 203mm long **Ridge** is also red & its section is shown left. It has a hole at each end & one in the middle, and is held to the Roof Slabs on either side by Bolts passing through it into 15mm long, red **Clamping Angles**, similar in section to the Ridge.

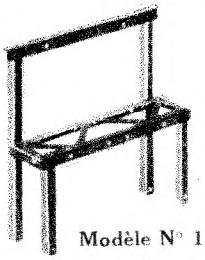
The **Wall Plate** is 100*200mm. Both sides are painted a dull yellow with speckles of red and black, and one face is decorated with grey blockwork along the bottom & sides, and 2 diamonds of red bricks. The outer 5 or 6mm at the top & ends of this face are painted silver but do not match the sides of the Trusses exactly and look rather untidy. The 28 holes are all near the edges, and are along the ends and at the top & bottom near the ends.

The M2 **N&B** are machined brass. The Nut is square, 5.0mm A/F & 1.9mm thick; the Bolts have 4mm Ø fillister heads and most are 4½mm u/h, with a few 12mm, threaded over 10mm. Along with what may well be the original blue and yellow **Cord**, there is some, rather thinner, in red, blue, & white. The **Insulating Pulley** is 10mm o.d., 5mm thick, & 2.8mm bore; it is hard & white and is perhaps made of porcelain.

The parts are generally well made and well finished.

**The SET** is packed in a 2 layer, wood framed, red box, 43*27*4cm. The 52 Beams & 40 Trusses are packed between 2 partitions in the tray, with most of the small parts on either side in yellow, end-opening card boxes. In the bottom a card tray at each end provides partitioning and the remaining parts were probably strung to red cards.

The **label** on the lid is a 15*31cm B&W photo showing a rail track, a 2-seat racing car on a road, a smart, propeller driven launch on a river, a bridge, and other frameworks including part of four of the manual models. It's a rather unusual picture, and in the foreground, partly hiding the models, are 2 what look like huge fir trees, of at least 4 times the height of a Garage. It is signed A. CAYEUX, PARIS, and under that, on the white border is L. DANEL, Lille. At top right is the maker's logo (above) and the initials are for Compagnie Industrielle de Jouets, give or take possible misspelling.


Modèle N° 1

The **Booklet** already mentioned is in English and has 8 pages 135*212mm deep; it could once have had the plain looking cover shown in MCS. It starts with the Contents of Box No.1, followed, on pp6-8, by the parts needed & brief building instructions for each of Models Nos.1-9, starting with the Bench (right) and finishing with the 80cm long Road Bridge shown in MCS. Other models include a Table, a Farm Shed and a Railway Platform.

The **Leaflet** is 203*454mm, folded into four, and is in French with an English translation of most of the wording. It contains photos of some of the parts (without the PNs given in the Booklet), and photos of the 9 models, with additional sketches & notes explaining the construction.

Enough detail is given to be able to build **the models** in the mind, and with the parts in front of one it seems that most will bolt together satisfactorily, although in some cases adjacent parts can only be bolted together through a pair of holes at one end or in the middle. Extra holes, or perhaps some slotted holes would have been worthwhile. For example with the holes provided the back leg of the Bench has to be 3mm longer than the front. Notice that the Beams & top Trusses are wrongly shown in the sketch of the Garage. The Nuts are large enough to handle easily but the Bolts are a touch fiddly and holding the Nuts inside some of the structures can be difficult. No spanner is provided or needed when using the Beams & Trusses, because one edge of the Nut bears against the flange; in other cases one would be useful.

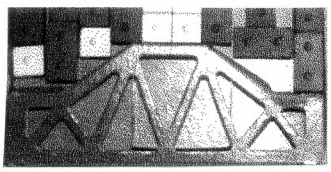
The only models with moving parts are 2 Swings. The 6 Pulleys are used in a Wireless Aerial, as insulators in the wires (actually Cord) slung between 2 square section masts, 45cm high.

**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 4th line of the 5th 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*1⅜". [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** Rhumkorff 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 19th 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 top 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 [YOUNÏ] 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); MECCA-MINI; 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

if you are thinking of going: either 080/54 90 06 (Belgian) or 06557/920640 (German). Euro Tecnica is also home to a large HO model railway with 60 trains on 1000m of track.

5. Clive Weston has bought one of the **1/12"-scale 'MECCANO'** doll's house sets mentioned in 14/395. They are made by Black Country Miniatures, 63 Church Street, Halesowen, West Midlands, B62 9LQ (tel: 0121 5615052) and are apparently strong sellers. The parts are produced by photo-etching - the Plates are painted brass and the Strips stainless steel. Clive's Set contains a dozen Strips of different lengths, 3 Wheel Discs, and 20 Plates, some green and some red. All are flat and the flanges of the #52 are not bent over. There are no Rods, N&B, or brassware. The box cover and manual are photo reduced and have varied from time to time. Some time ago the firm produced a batch of 50 'No.10' sets in cabinets, with more of the same parts plus some Rods and some blue parts. They cost £140 and there was 1 left last April. The 'standard' set costs £19 plus postage.

6. From Jacques Pitrat. On the parts in the **large Gilbert MECCANO Sets**, #115 & upwards (see 12/317 & 19/546). They didn't contain any ¼" Ø Axles, the 19½" long Axle was of standard diameter and was used as part of the mast in one of the Ship models. The ¼" bore Bush Wheel was only used to hold the Quill for the Propeller in another of the Ship models. [More on the Ship parts & models later - Ed.] The hole in the top of the Foot Block, #176, mentioned in 12/317, was large enough to take the boss of the 6" Pulley, 19c, and the upper one of the two in the detail of the No.125 Builders Derrick in OSN 12 (bolted above & below the Flanged Plate #53), is used for this purpose.

**COLOUR PICTURES** As mentioned in the Editorial certain illustrations from OSN can be downloaded from the OSN web site in colour & pasted over the B&W originals. If more convenient the Editor can supply the colour versions as A4 Sheets, price 40p per Sheet + postage.

Sheets currently available: OSN 2 (1 Sheet); OSN 3 (3 Sheets); OSN 20 (3 Sheets); OSN 21 (2½ Sheets).

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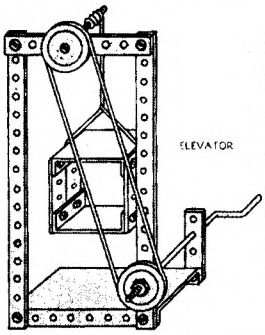
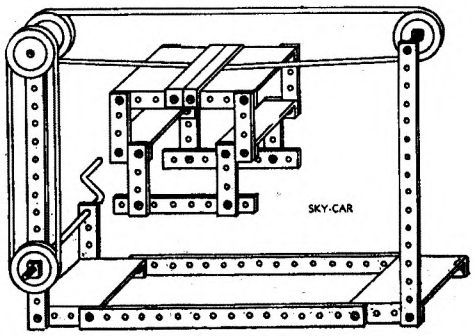
**JUNIOR MECHANIC** In 18/522 the cover of a manual for this small American system was shown and Kendrick Bisset has now kindly sent a copy of one that he found recently in a No.101 outfit.

SUMMARY OF MANUAL •Name: "*Junior Mechanic*" CONSTRUCTION SET •Details of maker: Mechanicraft, Inc., Jackson Heights, N.Y. •No dates or Ref Nos. •Page size: 210* 134mm deep. •No. of pages: 8 unnumbered inc covers. •Language: English. •Printing: line drgs of models; cover as 18/522. •Page Nos. of Parts List (no PNs): 8. •No Set Contents. •Sets covered: 101 & 201. •No. of models for each set: 13,14. •Name, Page No. of first & last model of each set (no Model Nos.): 101: ELEVATOR,3; BAGGAGE CART,4. 201: DRAW BRIDGE,5; SKY-CAR,7. •Other notes: 3 other small models are on p2 with Constructional Hints.

The 101 models are typically small items of furniture or wheeled Trucks & Wagons, but the Elevator (right) is more ambitious, though I can't see what is used for the top shaft or how it's supported. The models in 12/327 are among the No.201 models, and in addition there are brave attempts at a Steam Shovel, a Wrecking Truck, & the Sky-Car below.




Kendrick also wrote that the box lid of an ALUMINUM CONSTRUCTION SET he has acquired has red & blue panels separated by a white band, the same arrangement as that used on JUNIOR MECHANIC lids. Other similarities were noted in 12/327.

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**EXTRA MCS SHEETS** Each Sheet costs 15p + postage if the whole batch made available with each Issue of OSN is ordered in advance. That makes £7.70, £8.10, £9.30 for the 48 below, including postage to UK/Europe or by surface elsewhere/elsewhere by air. For all other purchases each Sheet costs 20p + postage. **(But 15p + postage if ordered before 1st Jan. 2000.)** All back Sheets can be supplied.

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EPA [B]: X1.1,4,4a,4b,5,7 [3]
GF Metallbaukasten: X1.1,2,3/5/6,7 [2]
JUNIOR MECHANIC: X2.2/3a,5a [1]
KONSTRUKTOR [12]: X1.1,2,4,4a,5 [3]
KONSTRUKTOR [13]: X1.1,2,3/4/6,5 [2]
MALYSH: X1.1,2,4/5 [2]
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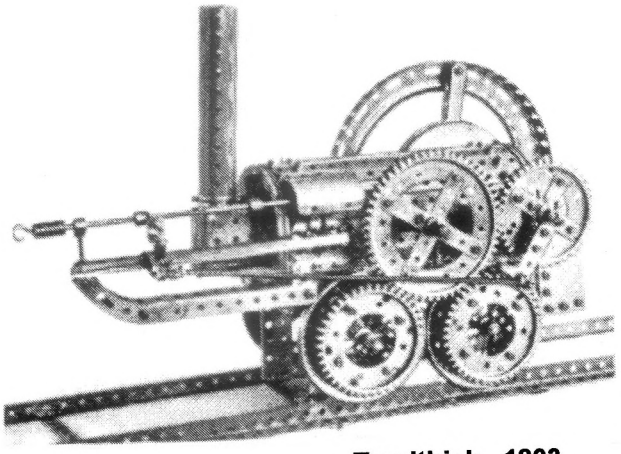
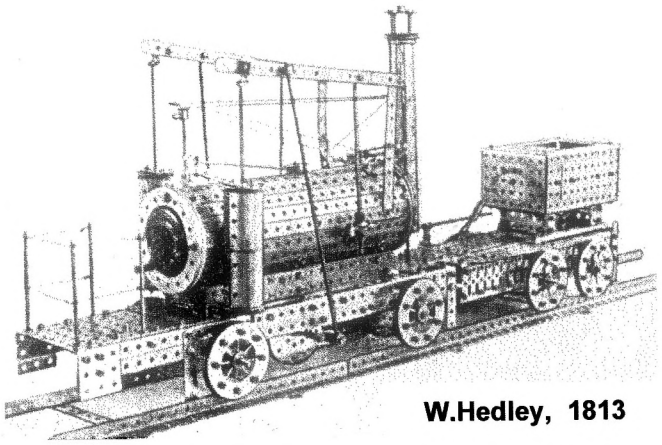
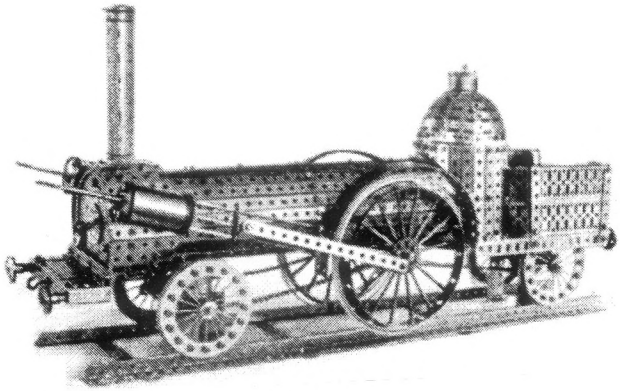


Trevithick, 1803

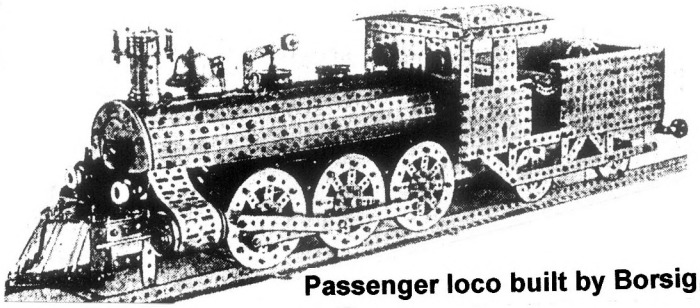


W.Hedley, 1813

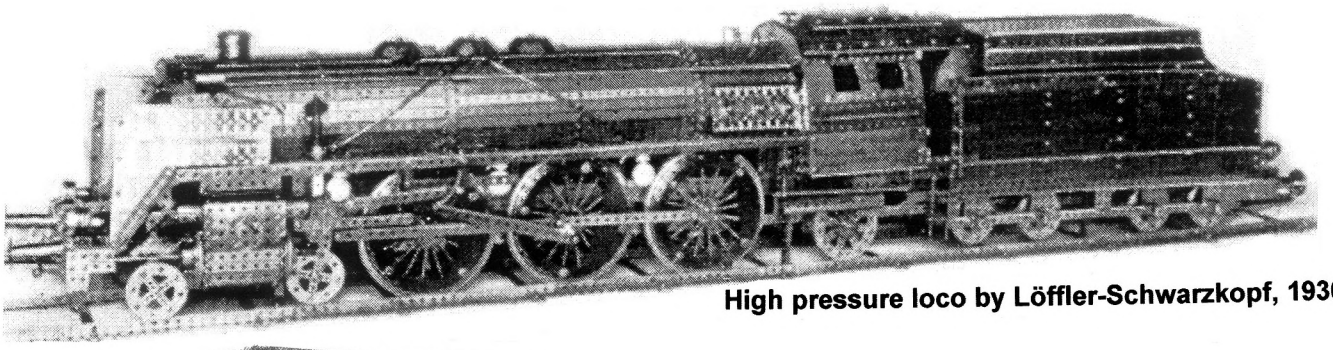
These are the 6 STABIL models mentioned in 20/571, that were used to illustrate an article on loco history in *Stabil- und Record Zeitung.*



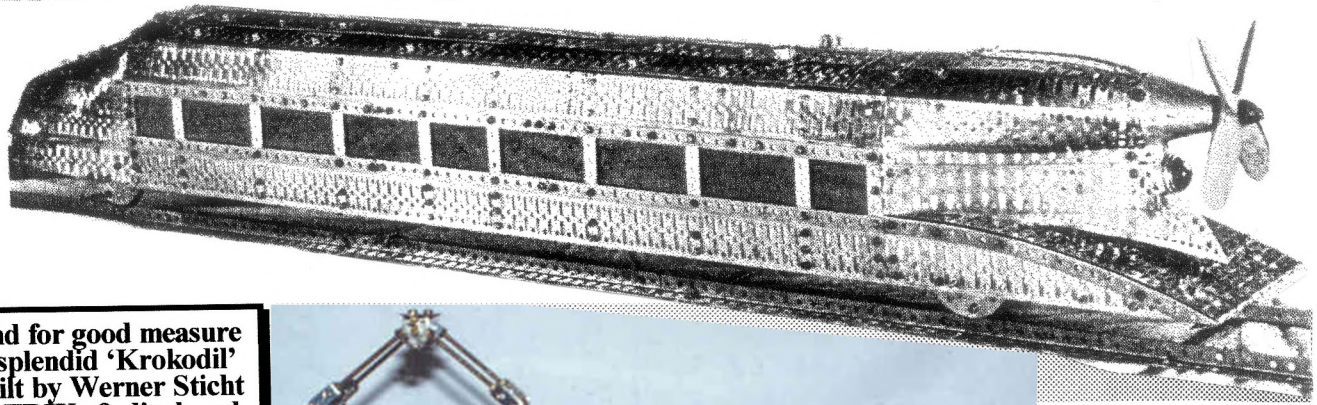
1st German built loco,
by Uebigau of Dresden, 1838



Passenger loco built by Borsig, 1870



High pressure loco by Löffler-Schwarzkopf, 1930



Schienen-Zeppelin

And for good measure a splendid 'Krokodil' built by Werner Sticht in TRIX, & displayed at the 1995-96 Nürnberg Exhibition.