

More ENTECH 12 small sets were mentioned in 32/971, and they still appear from time to time on Ebay, with a few from Germany & America too. I've not seen any actual examples of them but it turns out that they are made by Aries in India, the 'TOY KRAFT' people (see 22/627), and in July their web site (www.toy-kraft.com) showed a range of 20

outfits, the 12 on Ebay and 8 larger. At that time the latter were being offered on Indian Ebay. The details from the Ebay ads & the web site are given in the Table below. Some of the sets seem identical in content to certain of the Brazilian MODELIX outfits described after this, & more is usually known of them.

Sets		No. of Parts	Motor	No. of Models	Lid		Notes
Name	Ref. No.				Colour	Model(s)	
Mini's Flying Machines	1370-2	71;60;72	-	1;1;1	orange	blue/white: Plane*; Helio; Biplane (1)below	* see OSN 32
Mini's Automobiles	1373-5	65;65;67	-	1;1;1	blue	orange: Car*; Racer; Buggy (2) below	* see OSN 32
Mini's Trucks	1376-8	64;43;61	-	1;1;1	red	yellow: Truck*; Truck; Truck	* see OSN 32
Mini's Bikes	1379-81	82;77;70	-	1;1;1	yellow	red: Motorcycle; M/C*; M/C	* see OSN 32
Beginner Set 1; 2	1351-54	102;167	-	10;20	red	blue/yellow: Buggy? + 7 small; Racer + 6 small (3) below	Slightly larger models.
Dynamic Set 1; 2	1352;53	106;110	3v with G/box	6 Cars; 6 Trucks	grey/blue	orange: Town Car? (4) below; Truck, see MODELIX Mobil 2 lid.	Better models. 2xAA Batt. Box with fwd/rev buttons.
Turbo Set 1; 2	1355;56	102;112	Push-back	6 Cars; 6 Trucks	grey/orange	blue/white: 2 Racers (5) below; 2 Trucks	Quite simple models.
Master Multi-17; -15	1602;03	238; 310	3-4.5v in -17	17; 15	red (similar to 1351-4)	bright/yellow/blue; red: Scan Truck? + 7 small (6) below; Helicopter + 6 small, inc (7, 8) below	Parts inc M26, 27a,32; 2xM27f.



OSN 33/995

ENTECH: S2

New System: MODELIX Edmundo Veiga spotted this Brazilian system, which has been on sale since April, and he kindly sent details of the two sets he has, plus a reference to the maker's web site, www.modelix.com.br. It has pictures of the lids of the 12 sets in the range, the manual models for each, and the illustrated set contents for the 6 larg-est. Although in different packaging some of the sets have an equivalent ENTECH outfit, and of the rest all but two of the models on the lids are identical to known ENTECH models. The two exceptions are earlier TOY KRAFT models, changed a little in one case. So there is clearly an Aries connection and though the MODELIX sets have 'Manufactured in Brazil' on the cartons, Edmundo wrote that the parts are probably imported (as the sets are expensive, from the equivalent of US\$14 for the smallest to \$140 for the 17-model outfit, sales are not likely to be large, and therefore it would not be economic to make the parts in Brazil).

The first 6 sets have their parts in a blister with step-by-step instructions on the back of the card. The set above (No.1-03) is a **single-model set** equivalent to the ENTECH 1378; the other single-model sets are 1-01 and 1-02, with orange &



blue cards respectively, and they correspond to the ENTECH Nos. 1371 & 1374.

The other 3 blister packs are **2-model sets** 2-01, 2-02, & 2-03, with yellow, blue, & turquoise cards (2-03 is shown top left on the next page (it is copied from the web site where the cards are shown without the parts/blisters). The 2-01 models are the Aeroplanes from the earlier TOY KRAFT 1351 2-model set, see 22/627, but with red and black parts. Those for the 2-02 are the ENTECH Minis 1373 & 1375 (Cars), and for 2-03 they are the TOY KRAFT 1352 Trucks, but changed slightly,

and again with red & black parts.

The remaining sets are probably packed in boxes. The **Multi 1** (3-01) is the ENTECH Beginners 1 outfit, and has an orange lid with 3 blue/yellow models on it. The **Multi 2** (3-02) lid is shown on the facing page and 207 parts & 21 models are claimed – the model is from the Beginners 2 outfit but that set is said to have only 167 parts for 20 models.

The **Frição 2** (4-02) has a similar lid to the Turbo 2 but 114

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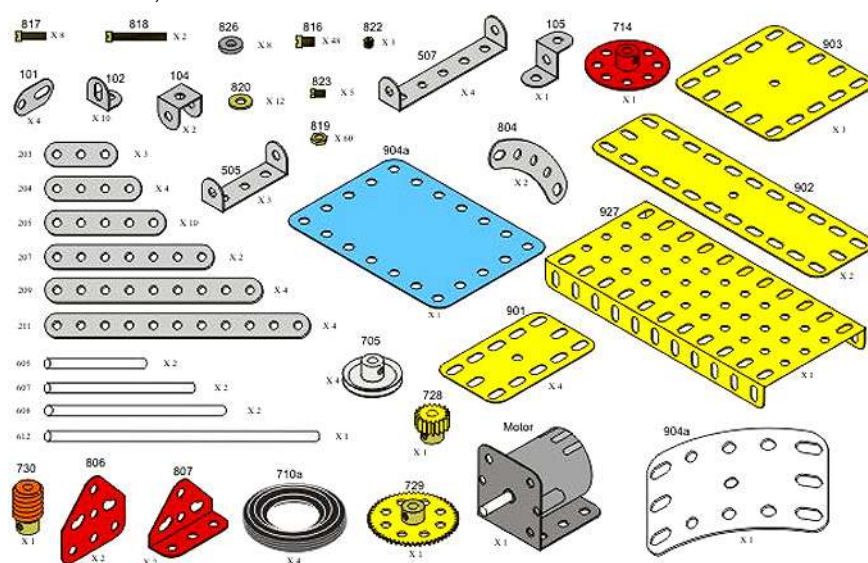
MODELIX: S1



parts are claimed instead of 112 – the extra 2 might be Tools not included in the 112 count. The **Mobil 2** (5-02) lid, right, is similar to the Dynamics Set 2 but at 111, has an extra part.

The **Master 15** is the Master Multi-15 with 2 fewer parts. The lid is quite different, green with a large picture of the Helicopter that is on the ENTECH version. Apart from this model & a nice Crane, most of the others are a good selection of Vehicles, some with centre-pivot steering. The **Master 17** is the Master Multi-17 but again the lid (right) differs. The models are nearly all Motor-driven through the Gears, & include Vehicles, a Tank, a small Helicopter, & 2 Steam Engines.

The **parts** in the Master 17 are shown below, & at the bottom of the



page those in the other boxed sets which are not in the Master 17. Not all the Axles are shown but are included in the **Set Contents** of the Boxed Sets in the Table on the right. The thread is $\frac{5}{32}$ " BSW as in TOY KRAFT but the Axles in Edmundo's sets are 4.06mm Ø. No Tools are mentioned anywhere but a Spanner (or Spandriver) can be seen in the 1-03 set on the previous page, and Edmundo's other set (2-01) has a red-handled Screwdriver in it.

Edmundo mentioned that the instructions for the 2-01 set would be very confusing for a youngster since some of the building steps for it are shown for the wrong model & vice-versa.



PS The MODELIX firm is: Leomar Equipamentos Ltda., Rua Bernardino Fanganiello 576, São Paulo – 02512-000. Tel: (11) 3858 0099.

Part	P	3-01	3-02	4-02	5-02	6-15	6-17
Flat Brkt	1		4	2	1	4	4
A/B	1	3	10	8?	8	14	10
A/B Obtuse	1	2	2			2	
D/B	1		2	1	1	2	2
Reversed A/B	1	2				1	1
D/B 2h high	1		1			1	
Strip 3h	2	5	4	3	3	3	3
Strip 4h	2	2	2	3	2	4	4
Strip 5h	2	2	6?	3	3	6	10
Strip 7h	2	2	2	2		4	2
Strip 9h	2	3	4	3	3	4	4
Strip 11h	2	2	6			8	4
A/B 1*2h	5	5		2			
DAS 1*3*1h	5	4	2	2	2	4	5
DAS 1*5*1h	5		4			6	4
DAS 2*3*2h	5				1		
Axle 1½"	6		2			3	
Axle 2"	6	2		1		2	
Axle 2½"	6						2
Axle 3"	6		1	1	2		
Axle 3½"	6		1			2	2
Axle 4"	6						2
Axle 4½"	6		1			2	
Axle 6"	6						1
Pulley 2h Ø n/b	7				2		
Pulley 2h Ø	7		4			4	4
Pulley 4h Ø	7					2	
Tyre, 2h	7		4			4	4
Tyre, 4h	7					2	
Bush Whl	7		1			1	1
Road Whl	7	4		4	6		
Road Whl, small	7	2					
Pulley 6h Ø	7					1	
Universal Gear	7					2	
Pinion	7						1
Gear Wheel	7						1
Worm	7						1
Pulley 1h Ø n/b	7					1	
Collar	7					1	
Spacer	7	5	4	4	4	4	
Curved Strip, Slotted	8						2
Curved Strip	8		2			2	
Trunnion, Flat	8		2			2	2
Trunnion	8		2		2	2	2
Bolt	8	20	42	28	30	74	42
Bolt longer	8	4	4	2	2	4	8?
Bolt longer still	8	1	2	1	2	4	2
Nut	8	25	50	32	34	84	60
Washer	8	4	6			8?	12
Grub Screw	8					1	1?
Set Screw	8		6			12	5
Axle Stop	8		6	2		4	8
?	8		2			2	
Crank	8		2			2	
Hook	8		1			1	
Steering Whl	8					1	
Motor, 3v							1
Motor/Gearbox, 3v	8				1		
Motor, Pushback	8			1			
Flex Plate 3*3h	9			2	2		
Flex Plate 3*5h	9		6?	2	2	4	4
Flex PI 3*5h, Clear	9	1		1	1		
Flex Plate 3*11h	9						2
Flex Plate 5*5h	9		2			1	3
Flex? Plate 5*7h	9						1
Triang Flex PI 3*5h	9			2	2		
Flgd Plate 5*11h	9		1			1	1

MODELIX Update Edmundo Veiga kindly alerted me to the changes to this Brazilian system since the account of it in 33/995. The very small sets have been replaced and a number of larger sets added, but the main change is the addition of several 'Robotic' outfits, two of them intended for use in schools. The amount of information given about the various sets varies considerably and some of the photos on the site are not of good quality.

THE CONVENTIONAL SETS To start with the small, usually single-model, sets. The 6 in the original range are no longer listed but instead there are 14 Mini and 5 Express sets.

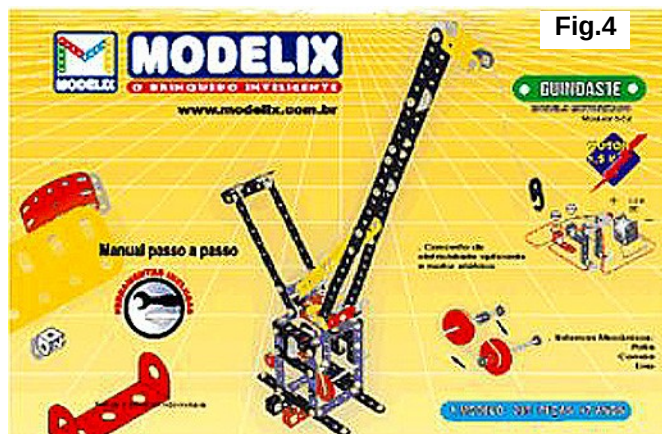
• The **Minis** are called: Furgão e Kart (Truck & Kart); Learjet e Bombardeiro (Learjet & Bomber); Carreta (Cart); Rover Lunar; Agripa (a 4-Wheel something); Carro de Corrida (Racing Car); Caminhonete (Lorry); Helix (Helicopter); Sedan; Jipe (Jeep); Avião Bimodelo (2 Aircraft); Helicóptero; Buggy; & Motoca (Motorcycle). These have between 63 & 93 parts, and while some of the models are comparable to those for the earlier outfits, some are rather more rudimentary. They are packed in black boxes with a yellow, or some-times a pinkish, label, and the Learjet e Bombardeiro (2 of the more interesting models) can be seen in Fig.1.

• The **5 Express** models are Beluga (right); Empilhadeira (Forklift); Autobus; Minicraft (Mobile Crane); & Trimoto (Trike). The models are even simpler than the Minis & all are shown on the box labels against a light pink ground, as in Fig.2.

The Larger Sets The OSN 33 sets mostly continue but the boxes are completely different, in, except where stated, the style of Fig.3.

The old sets still listed are: • **Multi 21**, the previous Multi 2. The '21' is the number of manual models (unchanged). • **Frição 2**, **Mobil 2**, **Master 15**, as before. • **Master 17**, as before but the featured model on the lid is the Steam Engine. The Master 15 & 17 are marked Not Available.

The new sets are: • **Multi 5 & Multi 10** which replace Multi 1; they have 105 & 102 parts respectively for 5 & 10 small models. • **Mobil 3**, 188 parts for the motorized Car on the lid (Fig.3). • **Mobil 4**, 180 parts for the small Helicopter on the lid – it is motorized with a cord drive to the tail rotor. • **Guindasta**



602, a motorized Crane as on its lid above (Fig.4). 285 parts.

• **Guindasta 601**, a hand-operated version of the 602 with a similar lid. Both the 601 & 602 were 'Not Available'.

• **Combo 4**, with parts to make the 4 small models on the lid simultaneously.

• **Combo 5**, as 4 but for 5 models. • **Combo 6** with 285 parts to make 5 small models and the Crane 601, 4 of which simultaneously. Another set marked Not Available.

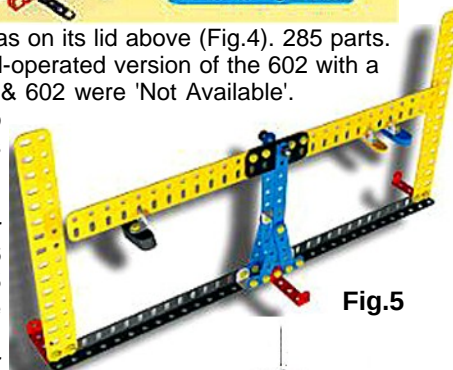


Fig.5

THE NEW 'SPECIAL' OUTFITS are:

• **Arquimedes II**, a set for experiments with Levers. 82 parts, plus full instructions and a CD. The lid shows the model in Fig.5.

• **Torre Eiffel Média**, a fair 68cm high Tower. • **Torre Eiffel Grand**, a much better model (Fig.6), with 1889 parts. It stands over 1m high and the base is about 30cm square.

The lid label is yellow with the Tower shown on it. • **Xadrix**, an outfit to make a set of chess pieces (Fig.7). A MODELIX first! The box has the same style of label as the Torre Eiffel Grand.

THE ROBOTICS OUTFITS These fall into three parts.

• First there are 6 sets listed as **Robótica de Entretenimento** (Robotic Entertainment). The smallest is **Laboratório Iniciante** with 164 parts for the small Crane on the lid. Next the **Laboratório Básico** with 236 parts. The lid is shown in Fig.8 but the parts in the Set don't match those shown. The Set is said to give an introduction to the concepts of mechanics, circular to linear motion for example, and to facilitate the assembly of simple mechanical models. The other sets are **Laboratório de Rob-ótica Intermediário**, **Avançado**, & **Inteli-gência**, all versão 2.0. Their lids are all similar in style to the Avançado in Fig.9 with

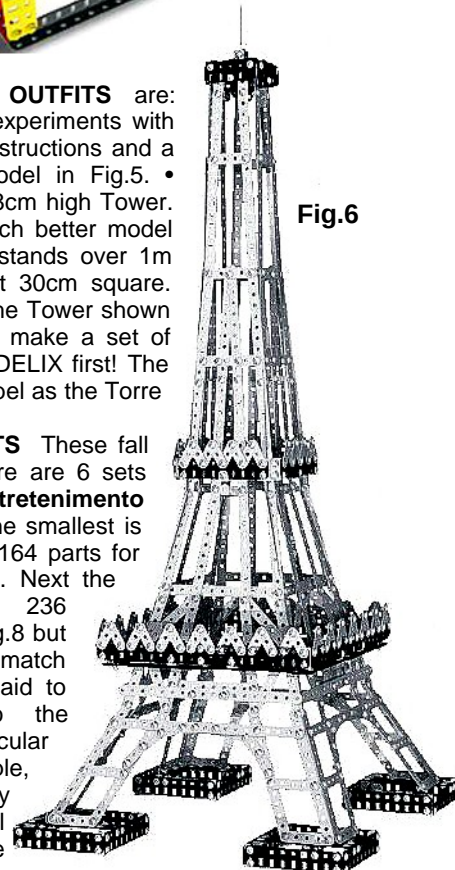


Fig.6

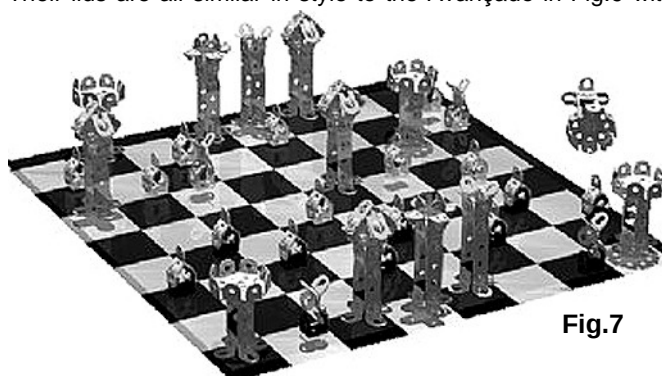


Fig.7



Fig.3

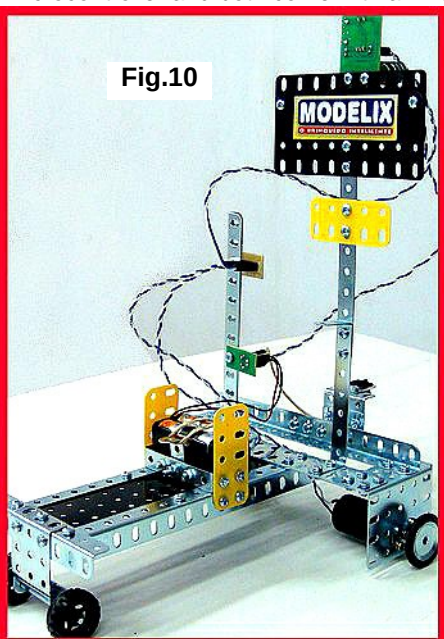


the same panel of constructional parts on each (see Fig.13). The 'Robotic' parts are listed in the top left panel and vary from set to set. The three sets are probably progressive both in contents and models. All three include a 1.5-6v Motor and an instructional CD. The **Intermediário** has a small Crane on the lid and among the 6 models is an Audible Alarm with touch sensor. An LED Circuit and Pressure Switch are also mentioned. The **Avançado** has 440 parts for 12 models and I suppose the model on the lid is a simple Drilling Rig. Extra parts over the Intermediário are a second LED Circuit, a Relay Circuit, and a Light Sensor – one of the models in a Vehicle 'driven by light'. Another is an Electromagnet, and Series and Parallel Circuits are mentioned. The model on the



Inteligência is the Car in Fig.3 and the Set has 462 parts for 17 models. The parts include a Magnetic Sensor, another Light Sensor, and another Relay Circuit. The models include a Telegraph for learning Morse, and 'a Robot with sensors to track light'. Finally a larger set called **Laboratório de Microcontrolado** but it is 'Not Available' and no details are given.

• Next are **two Kit Robo**, Robot RS1 & RS5, for Vehicles controlled by light sensors. • **RS 1** makes a Trike driven by a 1.5-12v Geared Motor which runs when the light from a torch shines onto a Light Sensor. • **RS5** has 2 Motors with Gear-box for a larger 3-Wheeler (Fig.10) and there is a video on the web site showing it following a circuit of a wavy black line on a white ground. It is said that both Kits could be used with a microcontroller and both come with an instructional CD.



• Finally **two outfits intended for schools**, Combo 6.4 & 7.4. Each includes 4 Robo Lab 6.4 & 7.4 sets respectively (basic structural parts, sensors, etc), plus Geared Motors, and the means to control the models. Again the instructions are on a CD.

• **Combo 6.4.** The parts in each Robo Lab 4 include Strips, Plates, Brackets, Pulleys, 150 N&B, a 1.5-6v Motor, and all the Sensors & Connectors in the

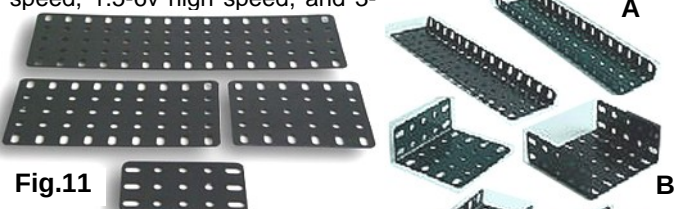
Robótica Inteligência outfit. The other parts are 4x 1.5-12v Geared Motors and a 3 channel Radio Control Transmitter, & Receiver MC21. The main models shown for Combo 6.4 are those on the lids of the 3 larger Robótica sets and no doubt the difference is that their switching is radio controlled rather than manual.

• **Combo 7.4** contains all of Combo 6.4 plus 4 more Geared Motors, an Arquimedes II set, a V5 Kit of parts (see later), and an MC2.5 Microcontroller. The latter is USB connected to a computer and the software supplied allows the models to be programmed.

ADD-ON SETS • **Robótica Mini Kit Polias** in a box with Pulleys, Brackets, etc on its Fig.8 style label. • **Robótica Mini Kit Motorização** in a box with a bracket mounted 1.5-6v Motor, Battery Box, Pulleys, Brackets, etc on the label, again in the Fig.8 style. • **Mecanix I**, in a black Mini type box with a 2 Pulley drive on the lid, one with a Handle Crank on its Axle. • **Electrix I & II**, both in black Mini boxes with mauve labels showing respectively: a bracket mounted 1.5-3v Motor with a 2 Pulley drive; and a Battery Box, a few parts, and bracket mounted electrical parts including a Lamp or LED.

EXTRA PARTS • **Structural parts:** • **Kit V3 de Plataformas** (2 each of the 1mm thick, epoxied Plates in Fig.11). • **Kit Estrutura V5** with a 5*15h Plate from Fig.11 plus Flanged Plates made from the 2 largest V3 Plates (one of Fig.12C and 2 each of the Fig.12A & 12B parts). • **Kit de Conectores** (some N&B plus a selection of Brackets and 3 & 5h Angle & Flat Girders).

• **Motors** 1.5-6v medium speed, 1.5-6v high speed, and 3-



6v 780P, all cylindrical. 3-12v Crouzet type Geared Motors DCM42, DCM32, DCM62. All but the 1.5-6v are mounted on brackets made from the V3 parts.

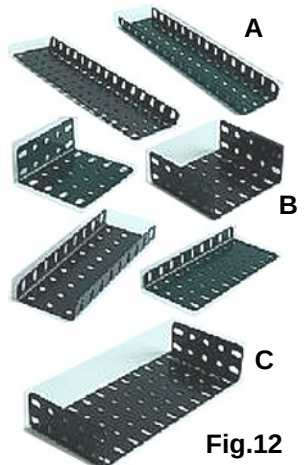
• **Sensors & Components**

Many of these are available as separate items, as per the web site. One is a programmable Microcontrolador Smart Tec which isn't included in any of the sets described, but perhaps it was in the 'Not Available' Laboratório de Microcontrolado outfit.

• **Caixas Plásticas** 2 sizes of empty black boxes with a MODELIX label on their transparent lids.

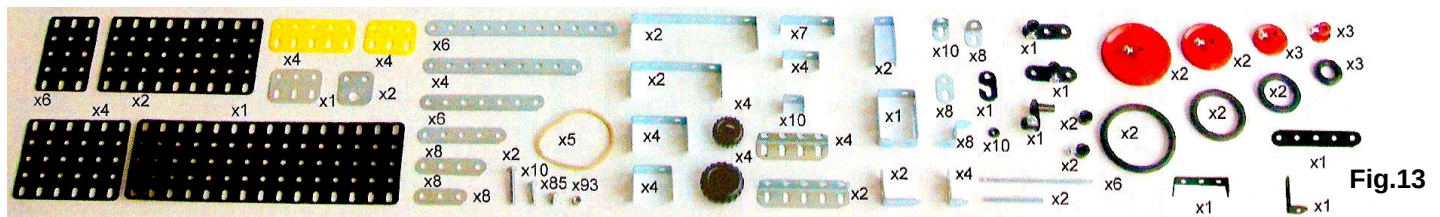
COMMENTS Most of the 'conventional' sets are unremarkable but the large Eiffel Tower looks the part & the Chess Pieces are a nice addition – plenty of play value. The smaller 'Entertainment' Robotic sets seem to be about elementary mechanics & electrics, and though they could provide useful, and perhaps necessary, background, they might be a disappointment to a youngster. The 'serious' outfits probably start with the RS5, and the two 'schools' sets clearly have potential. Edmundo wrote of them that although their components & spare parts are expensive and rather crude looking, such sets show how the metal construction toy should evolve in the future, and that Modelix are to be commended on their programme to introduce robotics into schools. My only reservation is that interest in the subject needs to be sustained with more ambitious projects and I'm nor sure this is taken seriously enough by either schools or manufacturers.

POSTSCRIPT: The **Inteligência Set** Edmundo wrote the following of the set he had acquired. The structural parts are shown in Fig.13 (though a magnifying glass may be needed to see the detail) and in addition the Set includes 1 each of the Flanged Plates marked A-C in Fig.12 (their sizes are wrongly described on the box lid). These parts are indeed somewhat



crude, with Strip parts & Brackets poorly made of of easily bent soft steel. (Whereas the parts in the basic, standard sets are of reasonable quality, and are almost certainly imported from India.) The thread is 5/32" BSW, with Phillips headed Bolts and hexagonal Nuts. The electric/electronic parts are mostly bought in locally and the Magnetic Sensor is actually a reed switch. The various electrical components could be used as building blocks for more sophisticated models but there is no interface to allow programmed control of them.

The Smart Tec Controller would meet this need when connected between a PC and a Robot, after the PC had been programmed using the very clever, user-friendly software supplied on a CD. The Smart Tec could also control a stepper motor but Modelix do not list one. Going one step further the MC2.5 Controller could, once programmed, act independently of the PC.



OSN 40/1207

MODELIX: S5

New System: PNCA Robótica e Eletrônica When Edmundo was investigating the MODELIX 'robotics' components he found that the Microcontroller MC2.5 is actually made by another São Paulo company called PNCA Robótica e Eletrônica, and that its main business is in the educational 'Robotics' market. PNCA's address is Rua: José Duarte de Souza, 700, São Carlos, São Paulo 13564-030. The details here are taken from the company's web site, www.pnca.com.br.

3 Sets are available, ALFA Hobby Kit, ALFA Educ Kit, and ALFA Expert Kit, all with 2008 after the name.

The **Hobby Kit** includes the Control Module MC2.5, software Legal 2008, 2 Tracking Sensors, 2 Contact Sensors, 2

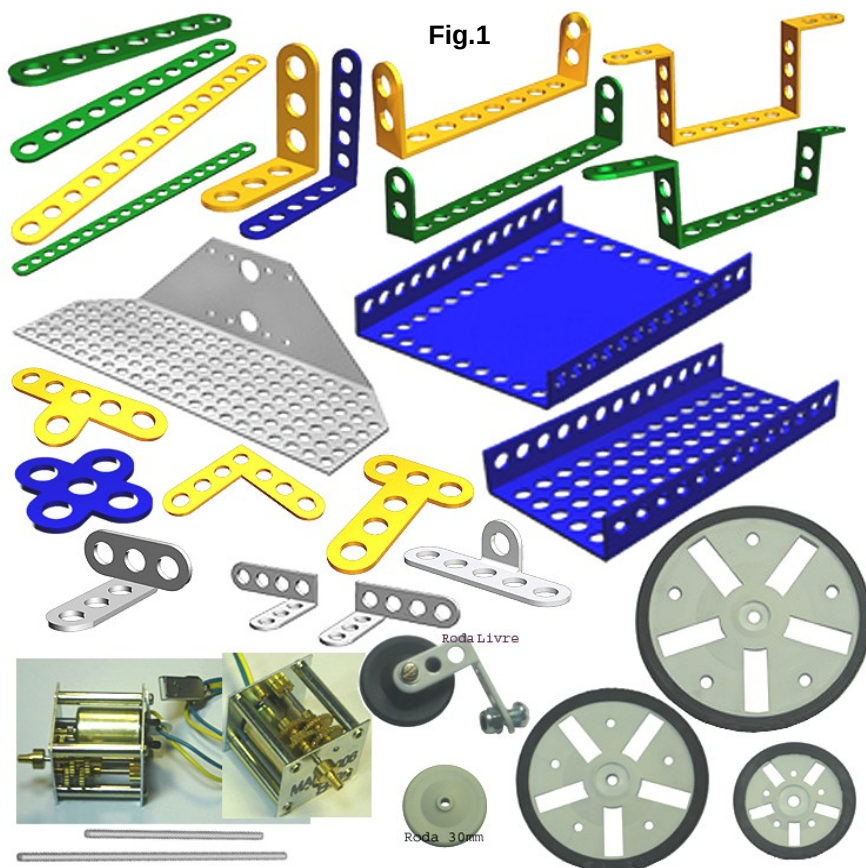
Geared Motors with Mounting Plates, a USB Lead, 2x 75mm Wheels, a Freewheel, metal structural parts, and N&B.

The **Educ Kit** has the Hobby parts plus a Servo Motor, various Wheels, 2 Light Sensors, a Temperature Sensor, an IR Sensor, & a Colour Sensor.

The **Expert Kit** has the Educ parts plus another Servo Motor, and a Noise Sensor.

The **structural parts** and the Geared Motor are shown (not to scale) in Fig.1. The Grey Plate is the Motor Mount. The diameters of the grey Wheels are 30, 50, 75 & 100mm. The part called Freewheel is the black wheel with arm. The Axles look to be Screwed Rods. Holes are probable at 10mm pitch.

Fig.2 is one of the 'Robots' shown on the site and the grey unit is probably the Control Module 2.0. Presumably this was an earlier version of the 2.5 and no doubt there were earlier kits based upon it.



OSN 40/1207

PNCA: S1