

# Science & Technology Equipment News

For Primary Schools and Teachers of S1/S2 courses

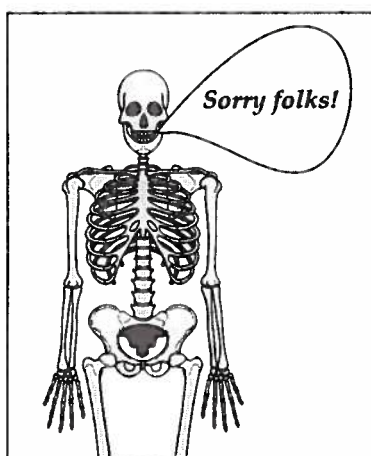
☎ Helpline 0131 558 8180

📠 Faxline 0131 558 8191

**STS** National Support Services in  
Science, Technology and Safety

© **SSERC** Number 10  
SCOTTISH SCHOOLS EQUIPMENT RESEARCH CENTRE Autumn 1996  
ISSN 1363-5794

As you can see - we survived - and herewith : *The News*. This issue is late. For that we apologise but, as the eagle eyed will have spotted from the header, we have flitted (see back page). That takes up time and energy, the nervous sort of the latter as well as the physical - *après le flit nous avons le fray*, as 'twere (et les groans). Who says scientists and technologists aren't cultured? Un-funny certainly, uncultured *mais non - nous sont terrible!* Not unlike this leader the rest of this issue is a bit of a rag-bag. We also have a little more apologising to do.



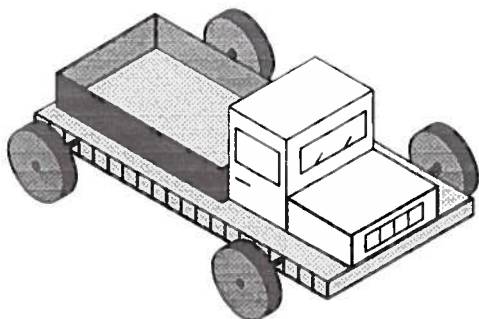
## Skeleton (oops!) offer

We seem to have caused more than a little confusion over the price and status of our skeleton pack as offered in the last Newsletter. The total cost is £1.25 including post and packing. The other nonsense about cash with small orders and a carriage charge only applies to the materials and components within our main listings. Our support services are only open to schools and other educational establishments in SSERC member EAs or subscribing independents. Our core budget is largely covered by their direct contributions and subscriptions. The £1.25 for the pack is only intended to cover our own marginal costs. The templates are thus copyright free within the purchasing school. You can produce as many skeletons as your photocopying budget will allow - fill those cupboards if you wish (although somehow we doubt it).

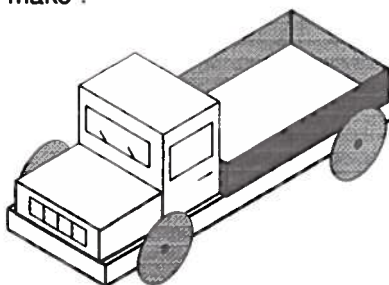
## Follow that buggy!

The interest shown in the skeleton template - despite the confusion - has encouraged us to produce a couple of other simple packs or kits. Our *Buggy Pack* follows up some ideas outlined in Newsletter 9. It gives a number of ideas on buggy building, from a static version to a battery powered model. Building the buggies should be good fun but they have the additional benefit that they can be used to overtake (no puns intended) many of the attainment targets in the 5 -14 documents. Included with the kit are a few basic ideas on how the models may be used in classroom activities. The models may be applied to many different activities relevant to Attainment Targets. Example targets for Technology, Mathematics and Science from the 5-14 Guidelines, are provided (examples p. 3).

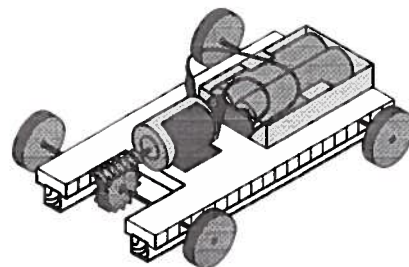
The kit contains instructions and materials to make :



one card lorry with wheels, roll along -



one card lorry. static -

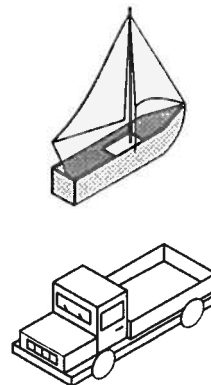
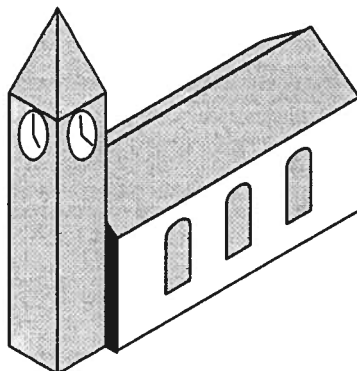


one battery powered buggy  
(batteries are included).

A minimalist policy has been followed as far as construction details are concerned, but they all have been trialled and built by 6 - 8 year old children. The *STS Buggy Pack* costs £5.00, **inclusive of VAT and postage.**

## Paper Engineering Pack

The pack contains a number of shapes that can be cut out and folded to make houses, a church, a lorry and a boat. The pack provides opportunities for introducing concepts such as those on the relationships between the two dimensional and three dimensional and of adding structural strength to a material by applying bends or folds. The models are **not** all built to the same scale.



An integral part of this pack is a tabulated set of examples showing how the material may be used to meet specific Attainment Targets from the 5-14 Guidelines. Such examples are given, at each planning stage, for Technology, Mathematics, Social Subjects and Science. The *Paper Engineering Pack* costs £1.80 **including postage and VAT**. As for the SSERC skeleton templates, each pack comes copyright free for use within a purchasing school. There is no need to buy multiple sets unless for any reason you are not able to do your own photocopying. The Text Box on the facing page illustrates just some ways in which the Buggy Kit and Paper Engineering Pack may be used within the curricular contexts provided by the 5-14 Guidelines for Environmental Studies.

---

## Third party resources

---

**A Fishy Tale:** Homerton College are offering an opportunity to explore a model ecosystem. This makes use of the ubiquitous plastic bottle and a number of Californian brine shrimps. The College reckon the system will run for months if placed on a warm sunny windowsill. A starter culture with brine shrimp eggs and instructions can be had for £5.00 inclusive of postage. Send a cheque (no orders/credit sales) for £5.00 to :

*David Barnard  
Department of Biological Sciences  
Homerton College  
Cambridge  
CB2 2PH*

**On the Rocks:** For those wishing to purchase rock or mineral samples we have found Richard Tayler to be most helpful and obliging, and his prices are very reasonable, e.g. Flint 50 x 50mm 30p, Amethyst 25 x 50mm 60p, Siderite 50 x 50mm 60p. Write or telephone for a price list and catalogue to -

*Richard Tayler Minerals  
Byways,  
20 Burstead Close  
Cobham, Surrey  
KT11 2NL Tel. 01932 862340*

**Be an Inventor:** This pack was designed by a primary teacher in collaboration with the British Library in an attempt to answer childrens' questions such as "How does it work?" or "Why does that happen?"

The pack contains work cards, teachers' notes, a board game and a number of objects to stimulate discussion. The aim of the material is to use patents as a starting point for investigation into the development of everyday appliances. The single pack price is £15.00 and *Be an Inventor* is available from :

*Two-Ten Communications  
PO Box 5  
Wetherby  
W. Yorks  
LS23 7EH Tel. 01937 840210*

**Scottish Acorn Computer Show:** This will be staged on Sunday 8th December in the Stakis Hotel, East Kilbride and will be open from 10 am to 6 pm. We will be exhibiting. Details are available from :

*Todd Education Computer Services,  
4/140 Busby Road,  
Glasgow G76 8BG Tel. 0141 644 4952*

## Sample matching of activities : *Buggy Kit* and the *Paper Engineering Pack*

Technology	Understanding and Using the Design Process		
	P1/P3	P4/P6	P7/S2
Applying skills and presenting solutions.	Follow oral and pictorial instructions. (Accurately) Use simple tools. Make effective and safe use of materials, tools and equipment.	Follow diagrammatic instructions. Use appropriate materials, systems and tools for a given task with care and safety.	Safe and confident use of tools and materials and the organisation of the working environment.
Knowledge and understanding	Effectiveness of design, practical skills in using safely equipment and tools.	Solve design tasks by a variety of means. Select and order a sequence of activities for tackling a problem.	Draw up detailed plans for a sequence of tasks. Identify factors influencing design.
Mathematics.	P1/P3	P4/P6	P7/S2
Shape, Position and Movement	Create or copy 3D structures. Make 3D shapes from diagrams or pictures.	Identify 2D shapes within 3D shapes. Recognise 3D shapes from 2D drawings.	Make 3D models, solid or skeletal, using nets: cube and cuboidal only.
Science	Understanding Energy and Force		
<i>Forces and their effects</i>			
	P1/P3	P4/P6	P7/S2
Knowledge and understanding	Effects of force in pulling and pushing. Moving and stopping. Introduce friction.	Friction as a force. How to reduce friction. Introduce gravity as a force. Air resistance.	Affects of gravity on a buggy on a slope. Air resistance and streamlining.
Collecting Evidence + Recording and Presenting	Estimate and measure length. Timing events. (How far the buggy travels down the slope, how long it takes). Record on simple database.	Use fair testing methods and devices to time and measure distances. Use if appropriate computer database.	Using more advanced timing techniques e.g. light gate and computer introduce gravity and acceleration.

## ASE Scotland News

### **Annual Meeting**

This will be held in March 1997 in the conference facilities of Heriot Watt University. A copy of the programme with a booking form is an insert to those copies of this issue which are being distributed to Scottish schools.

### **Be Safe! - inset course**

Development work on a training course on Be Safe! was interrupted by Council re-organisation but the completion date is now rescheduled for February '97.

### **Be Safe! - reprint**

The full title of this ASE Scotland publication is:

*Be Safe! : Some aspects of health and safety in the Scottish Curriculum - Environmental Studies 5 - 14.*

Copies are available from either ASE Booksales at £4.50 (-10% to members) or direct from SSERC at £4 including postage. Orders from SSERC for more than five copies (ie six or over) to one school will attract a further small discount and will be £3.75 per copy.



## Components & Materials List

593	Miniature motor, 1.5V to 3V, 2mm dia. shaft	30p
614	Miniature motor, 3V to 6V, 2mm dia. shaft.	45p
	Both of the above motors can be used for project work but they run at fairly high speeds, some form of gearing will be required. See worm/gear, item 811	
621	Miniature motor, 1.5V to 3V, 1.5mm shaft. The open body of this motor makes it ideal for showing how such a motor is constructed.	25p
811	Worm and gear, gives a 34 to 1 speed reduction.	35p
629	Dual tone buzzer with flashing light supplied with PP3 battery clip. Ideal for model burglar alarms, warning barriers, police car etc..	55p
710	Sonic switch. Clap your hands, the motor starts, clap again the motor reverses, on the third clap the motor stops. Needs 4 AA cells, not included.	60p
688	Crocodile clips, red, miniature, insulated.	5p
759	as above but black.	5p
789	MES (miniature Edison screw) lamps (bulbs) 3.5V.	9p
691	MES battenholders for above.	20p
508	LED (light emitting diode) 3 mm, red.	50p/10
761	LED 3 mm, yellow.	60p/10
762	LED 3 mm green	60p/10
790	3V buzzer.	55p
788	Crocodile leads, assorted colours, insulated croc. clips at ends, 36cm long.	£1.35
791	Propeller, 3 blade to fit 2mm shaft. Blade 55 mm long.	45p
792	Propeller kit with hub and blades for ten 3 or 2 bladed propellers.	£3.50
793	Cotton reels (for making buggies, rubber powered tanks etc.) pack 10.	45p
794	As above but pack of 100.	£3.50
796	Pack of 20 pulleys, 5 of each of 10, 20, 30 and 40 mm diameters.	£2.50
798	Pack of 24 gears, 6 each of 12, 20, 30 or 40 teeth, dia. 15, 22, 32, 40 mm 12 tooth gear fits motor shaft and 40 tooth gear is push fit in cotton reel	£2.00
799	Pack of 24 cams, 6 of each of 4 shapes	£1.00
800	Pack of 100 wheels, 39 mm diameter, assorted colours, 3 mm axle hole	£5.25
814	Ring magnet, 24 mm o.d., 6 mm i.d.	20p
815	Ceramic square magnet, 19 x 19 x 5 mm	15p
817	Axles 3mm dia., nickel plated, round ends. push fit on SSERC plastic wheels, gears and pulleys :70mm long, per pack of 4	40p
818	As above but 95mm long, pack of 4	40p
819	As above but 12mm long, pack of 4	40p
820	Worms to fit 2mm electric motor shaft, pack of 5	£1.00
821	Reducers 3mm to 2mm enables gears, pulleys and wheels, to be fitted to motor shaft, per 5	25p
723	Microswitch miniature, lever operated	40p
822	Plastic toggle switch, low voltage	40p
824	Ceramic magnets, poles on face, 25 x 19 x 6mm	35p
823	Ceramic magnets, poles at ends, 10 x 6 x 22mm	12p
825	Forehead temperature strips, liquid-crystal type, 36-40°C (96-104°F) (store in cool cupboard)	50p

Floppy disks various makes - Precision, Nashua and Verbatim new in unopened boxes of ten disks. The 5¼ inch types are all suitable for use on both IBM PCs and compatibles and BBC Bs or Masters with appropriate drives. The 3½ inch types are suitable for use on later PCs and all Acorn RiscOS computers. (Surplus stock from Fife College to whom thanks are due).

832	3½ inch, Precision, double-sided, double density, box of ten disks	£1.00
833	Floppy disks, as above but 5¼ inch, double density. box of ten disks	60p
834	Floppy disks, 5¼ inch, double sided, high density, box of ten disks	60p

*See inside for our Buggy Kit and Paper Engineering Pack offers.*

**Payment with orders totalling less than £5 nett please. Except where the price is described as inclusive (eg kits, packs etc) please allow £1 for carriage then add VAT to the total.  
Please note also our new address details.**

**SSERC, St.Mary's Building, 23 Holyrood Road, Edinburgh EH8 8AE  
Tel. 0131 558 8180, Fax. 0131 558 8191.**

SSERC is a Company Limited by Guarantee controlled through Scottish Councils as Education Authorities and is a recognised educational charity.