

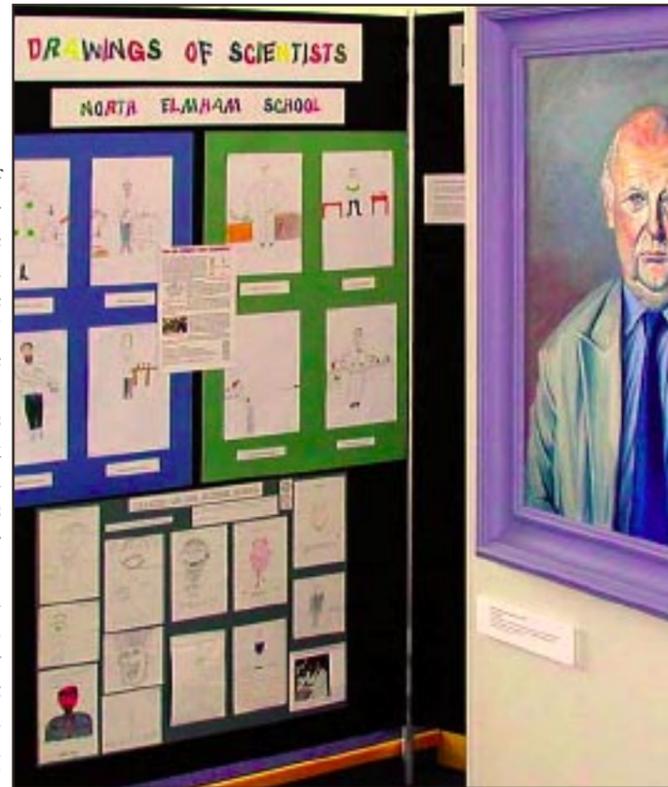
## How do Children view Scientists?

### Do 'TSN children' see them differently?

Intended to complement the 'Defining Features' exhibition of scientists' portraits at the Sainsbury Centre in UEA, a smaller exhibition has been on display at the John Innes Centre. The principle pictures were of scientists, painted by scientists, and give some clues to how scientists see themselves. Alongside these portraits were a set of pictures drawn by children from two TSN schools, North Elmham Primary School and Hethersett Middle School.

We know that children usually draw or describe scientists as middle-aged men in lab coats with wild hair and thick glasses, and nearly always associate them with eccentricity and delusion. Quite often the context is an 'experiment' that has catastrophically gone wrong, accompanied by explosions, danger and destruction.

But there is much less of this shown in the pictures produced by these particular children, many of whom have worked with the school's TSN scientist. A number of these pictures show women scientists and, although there are plenty of the usual test tubes and bubbling coloured liquids, the context appears calm and controlled and you need to look very hard to find the usual wild-haired bespectacled mad scientist. It seems as though TSN children have jettisoned the boffin stereotype.



### New Members - Welcome

**Mrs. Judith Harden**, Research Assistant, JIC

**Mr. Tim Noel**, Research Scientist, IFR

**Ms. Pauline Stephenson**, JIC

**Miss Kim Smith**, Research Assistant, IFR

**Mr. Chris Best**, Teacher, Caister Middle School

**Mr. Ross Morley**, Head of Dept., Thorpe St. Andrew High School

**Miss Claire Furness**, Science Co-ordinator, Arden Grove First School

**Mrs. Cindy Baldwin**, head teacher, Bawburgh Primary School

**Miss Rachael Judd**, Science Co-ordinator Poringland Primary School

**Miss Anne-Marie Baker**, Science Co-ordinator, Catton Grove First School

**Miss Bridget Andrews**, teacher, Wroughton Middle School

**Miss Liz Saunders**, Science Co-ordinator, Freethorpe Primary School

**Ms. Mandy Walden**, Science Co-ordinator, Spixworth First School

**Miss Susan Votier**, Teacher, Drayton First School

**Mrs. Gillan Duthie**, Science Co-ordinator, Scarning Primary School

**Mrs. Elaine Eriksen**, teacher, Westfield Infants School

**Dr. Paul Williams**, Science Co-ordinator Kinsale Avenue Middle School

**Mrs. Glenys Shorter**, Science Co-ordinator, Chapel Break First School

**Mrs. Chris Denton**, Science Co-ordinator, Mulbarton First School

**Ms. Frances Couper**, teacher Sutton First School

**Miss Sarah Jones**, teacher, Attleborough High School

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### Equipment to give away

The Institute of Food Research and the John Innes Centre have given us some redundant equipment for school. We have... several Macintosh computers various laboratory glassware a travelling Microscope a pair of polaroids in rotating mounts

Contact Frank Chennell if you would like any of this equipment.

### TSN School Loan Kits

#### Available now:

- Seeds kits (KS 1,2)
- Microscope kit (KS 1,2)
- Microscope (KS 3,4)
- Flexcam kit (KS 1,2)
- Torso (KS 1,2,3,4)
- Flexcam kit (KS 1,2,3,4)
- Skeleton (KS 1,2,3,4)
- Heart Kit (KS 1,2,3)
- Germ Kit (KS 1,2,3)
- 'Day in the life of a plant' (KS 2,3)
- Spectrophotometer (KS 4,5)

#### Coming soon:

- Forces and Motion (KS 1,2)
- Sound (KS 1,2,3)

For further details contact John Mallott at the County Science and Technology Centre, Norwich. Telephone 01603 620337. Also at [www.tsn.org.uk](http://www.tsn.org.uk)

**TSN Website**  
For the latest details on masterclasses, school loan kits, and for other TSN news, visit [www.tsn.org.uk](http://www.tsn.org.uk)

### Teacher Scientist Network

Coordinator: Frank Chennell,

Chairman: Prof. Keith Roberts

John Innes Centre, Norwich Research Park, Colney, Norwich, NR4 7UH

Telephone +44(0)1603 450000 & +44(0)1362 668337, Fax +44(0)1603 450015, Email [ts.network@bbsrc.ac.uk](mailto:ts.network@bbsrc.ac.uk), ([www.tsn.org.uk](http://www.tsn.org.uk))



## For Children at KS 2 and KS 3

### There's more to light than meets the eye

#### Another 'Secrets and Science of Survival' Event for Science Week March 2001

Light affects the activity of many living organisms. Growing, moving, migrating, finding food and finding a mate are just some of the things they do in response to light.

'There's more to light than meets the eye' will show children how living things detect light and respond to it. Mike Linley from the award-winning 'Survival' TV series, will give an interactive talk supported by many interactive displays and demonstrations, including live animals and plants.

- How does the eye work? How did it evolve?
- How do plants and animals respond to light?
- How do insects' eyes differ from human eyes? What does an insect see?
- Can rabbits see behind themselves? Can cats see in the dark? What does a fish see?
- How do living things respond to ultra violet, visible colours, and infra red?
- Why do glow-worms and deep-sea fish produce light? How do they do it?
- Why are butterfly wings iridescent?
- How can technology help humans see better?

Supporting exhibits will include a large working model eye, light sensitive plants, seeing what animal see, infra-red camera, microscope, telescope, walk-in giant camera and other demonstrations.

'There's more to light than meets the eye', is for school children in key stages two and three, and will be held in the John Innes Centre. The event will take place twice a day (AM and PM) on 15, 16, 19 and 20 March. Entry is free.



Schools Minister Jacqui Smith will open the event.

Details and application forms for tickets will be posted to schools in the Norfolk area in the New Year.

## Pounds for Partnerships

The Royal Society has recently launched a major new grants scheme to fund partnerships between schools and scientists or engineers from universities and industry. The scheme offers grants of between £250 and £2500 to give partners the opportunity to develop projects that will give 5 to 16-year-olds a taste of real science, which is precisely what TSN partnerships do.

Last year the Society undertook a wide-ranging consultation with potential partners and organisations in the field of science education, including the TSN, to determine what was needed to bring contemporary

science into the classroom. Naturally, TSN made a strong case for another partnership scheme.

We have been told that existing TSN partnerships will qualify, and will be able to apply for a grant to support a particular project that is being undertaken, or considered.

So – don't miss out; the money is there. Why not contact your partner and discuss how your partnership could tap into the scheme?

If you would like to know more about the scheme, please contact Ginny Page in the Society's education department (tel. 020 7451 2577 or email [ginny.page@royalsoc.ac.uk](mailto:ginny.page@royalsoc.ac.uk)).

## What is a scientist?

### Some eight-year-olds' ideas

Before Jo Belsten (IFR) was introduced to her teacher-partner's class the children were asked what they thought a scientist is. Only then were they introduced to 'their scientist' – Jo. Predictably, they were most surprised to see a woman rather than a wild-haired male, and amazed that this scientist is also William's Mum!

Here are Class 4's ideas before they met Jo:

#### A scientist is...

Aaron *People who check teeth*

Christopher *Someone who can tell if something is going to collide with our planet*

David *A person who investigates things*

George *A man who tests things out to see if they are right or wrong*

Alex *Someone who looks at stuff and paints them on a piece of paper*

Dominique *A wonderful person who finds out things*

Daniel *Someone who discovers something*

Sophie *A man who does art*

Christopher *Someone who works things out*

Katherine *Someone who makes a lot of chemicals*

Michael *Someone who looks through a microscope at things*

Kerry *A brilliant person who can teach us science*

Maya *A person who does lots of experiments*

Emma *A person who teaches people science*

Adam *A person who discovers and makes things*

Ryan & James *Someone who discovers things*

Kate *Someone who finds things out*

Samantha *Someone who draws things*

Nicole *Someone who helps someone*

(See *How do children view scientists?* on the back page)

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## TSN Master Classes

Our popular one-day Master Classes are designed to help teams of high-school teachers 'catch up' in a particular science topic in of their choice. These classes are meant to re-enthusiase and encourage science teachers in their chosen subject, rather than to supply teachers with specific curriculum ideas for the classroom. However, teachers being teachers, they will inevitably choose and adapt some Master Class material for school use.

The Master Class format is talks by, and discussions with, leading scientists in the morning session, with hands-on related activity in the afternoon. (More details at [www.tsn.org.uk](http://www.tsn.org.uk))

Our sixth master class – on modern analytical chemistry – was held at UEA in the summer. Around three dozen teachers spent the morning with scientists who are experts in topics such as forensic analysis of ultratrace drugs and using holograms and biomedical molecules as chemical sensors. Teachers spent the afternoon using Fourier Transform IR and UV spectrophotometers.

We held the seventh Master Class in November, again at UEA, but this time it was a



'Analytical Chemistry for 2000'  
Preparing for the practical session with Spectrophotometers

Master Class with difference. Rather than dealing with a specific topic in science, this master class examined the different facets of the work that scientists do. The morning dealt with scientific methods and approaches, related ethical and political issues, and communication in science. In the afternoon, teachers divided into three groups, each group undertaking one of these tasks:

- refereeing a manuscript for a scientific journal,
- preparing a briefing document for the House of Commons, or
- preparing advice for an institution on its release of radioactive materials.



'Working as a Scientist' Afternoon session on radio active release safety levels

Ali Beven (JIC) and Sandy Watson (Tunstead Primary School)

Ali and Sandy's TSN partnership began in January this year with a half-day planning meeting at the JIC. At first, Ali—aided with TSN loan kits such as the human torso, heart rate monitors and microscopes—worked alongside Year 5 and 6 pupils who were learning about the human body. But fairly soon they were planning something considerably more ambitious: a whole-day event for all the children in the school, and their parents. The main purpose of the day, they decided, would be to show that science can be fun and to give children of all ages the opportunity to take part in a number of different practical activities throughout the day.

Tunstead's Science Fun Day saw Years 5 and 6 children finding out 'How Fit are



## 'I did' or 'It was done'?

Most science teachers will know from their experience that although most children love the 'hands on' work in science they usually loathe the formal 'writing up' that often follows it, boys considerably more so than girls. Knowing this, some teachers – especially primary school teachers – encourage their pupils to write a letter to a friend telling them about their work, or they ask them to produce a newspaper report or a story describing what they did and what they found. Sometimes a group of children will produce a huge wall display that informs everyone of what they did and what they found out.

Children usually respond enthusiastically to personal and creative elements of their work, but can become vexed and diffident if they feel they are losing ownership of the work they have done. This can happen when children are required to use a passive voice and rigid format for their written science reports. Schools, secondary schools especially, have tended to promote just such a passive, formalised style, although this is not as widespread as it was. The justifying reason for using a passive style being that the report is somehow more scientific, and that objectivity is maintained.

However, in the scientific world beyond school, a number of prestigious scientific journals have for some time now been encouraging their research contributors to adopt a more direct and personal style of writing, and clearly do not consider scientific integrity to be compromised.

### What do TSN members think?

A short while ago, responding to a suggestion by Dr. Rupert Sheldrake, TSN members were asked what they thought to be an appropriate writing style for a scientific report. Should the style be direct; 'I measured the height...', 'We found...', or should it be passive; 'The height was measured...', 'It was found that...'? Which style is appropriate for a research paper? Which is best for children's written work in science lessons?

Bearing in mind the rather special (TSN) sample of teachers and scientists, which may not be representative of teachers and scientists generally, here are their views:

### Most TSN Scientists say...

- the passive style is more appropriate for scientists writing research papers.

### Most TSN Primary and Secondary Teachers say...

- they are not sure which style they think scientists should use.

### Both TSN Scientists and Teachers say...

- school children should adopt a direct style, although a significant minority believe the passive style to be more appropriate for older children.

