



TSN News

Encouraging Partnership

Carol Bennett
Old Catton Frst School

What was it going to be like having a partner? It seemed a bit like blind date except that someone else made the choice for you. Would it work? Would we end up commenting on each other's faults? Would it be a happy time with promises to meet again or a dismal encounter with a vow never to see each other again?

I had first heard about the TSN in February 1994 and was immediately taken with the idea.

We can all learn from each other, teachers need to continue to add to their own knowledge by encouragement rather than the threatening climate we have sometimes experienced. Children, too, benefit from contacts outside the rather sheltered world of school. It all sounded like a very good idea, and I'm all for being part of good ideas.

The induction meeting made clear that these were to be partnerships of equals but were to be teacher-led rather than dominated by the world of science. Even better, except that having the responsibility for leading seemed a bit daunting. What was this going to mean for me?

Dr. Mark Leech turned out to be approaching seven feet tall, does amazing things with DNA at the John Innes centre and would be

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Half-year Meeting

Over 50 members of the network braved the sleet and snow to come to the meeting at the Institute of Food Research. Mike Ambrose (JIC) and Alison Smith (JIC) outlined some ideas they have for school investigations; Mike showed his now celebrated moving seeds, and Alison explained how the traditional—and erroneous—'round and wrinkled peas' investigations done in high schools might be improved. Faye Kalloniatis from the Museum Service explained an idea for developing the science dimension of some hands-on exhibits, and appealed for help (see page 3). Partners Carol Bennett (Lodge Lane First School) and six foot six Mark Leech (JIC) told us how little ones respond to a big friendly giant*, and partners Lynn Frost (Lynn Grove High School) and Cathie Martin (JIC) told of some really exciting work on DNA cloning they are doing in school. Rachel Burton (JIC) has been roped in to help.

The meeting ended with an open forum focusing on how the network is progressing—or not. Members thought it is important to:

- find several ways for all network members to share the work developed by partners, e.g. displays at network meetings, publish packages that could be circulated, and of course, the TSNews;
- develop a database of information that tells what partners are doing;
- develop a database of scientists who are willing to offer information, help or talks to schools other than their own partner schools;
- recruit more scientists representing the physical sciences;
- investigate the benefits of TSN involvement with the Internet.

*Roald Dahl's book for children *The BFG* (Big Friendly Giant)



Five year olds can use a microscope

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able to bring plants and a microscope into school.

I had specifically requested a partner who was a botanical scientist as the school felt we needed to be making more of our wild-life area. It therefore seemed to make most sense to make this clear at the outset so that our needs were made known.

The initial stages of any relationship are full of worries and misunderstandings—about who should be phoning whom; 'is he coming this Thursday or next, whatever will he think about the mess in my classroom, what am I ex-



Carol Bennett and Mark Leech with yr 1 pupils

pected to do?'

We have both been on a learning curve, but it has been learning rather than failing. It has been a pleasure to have someone from the outside world into the classroom. It has helped me to feel that I am part of the outside world. It has also been quite humbling to watch someone of such experience and expertise get down on his hands and knees to talk to four and five year olds about the wonders of nature. He has opened up the world to them in ways that I am just not able to do.

It has also been amusing to watch his nonplussed expression when the children ask him quite unexpected questions such as 'How do dragons fly?' and 'Why are scientists so tall?' I have also been to the John Innes Centre so that I could see what Mark was doing. I did my best to understand... it gave me an insight into how children sometimes feel.

What was most fascinating was Mark's enthusiasm for his job, his belief in what he is doing and the quiet confidence that it gives him.

'Do you subscribe to the notion that morphic fields determine scientists' height, or is it your genes that govern their tallness?'

I am more convinced than ever that we can all learn from each other, that we teachers need encouragement and that children benefit from contacts with the world outside the school. ◇

Superkid

Jane Dye
Avenue Middle School

The first meeting between a scientist and children at Avenue Middle school was quite thought-provoking. Dr Roger Hull of the John Innes Centre introduced the idea of genetic engineering to a group of Year 7 (11-year-old) pupils.

One pupil's impression:

'Dr Hull told us that everyone has about 100,000 genes inside them and that the product of each gene is a protein. He said that scientists can put one or two genes into a potato seed to make different types of potato. They also do this to animals, taking egg cells from inside their bodies, putting in some different genes and then putting the cells back in.' Later on the children were asked for some of their own ideas for genetic engineering:

'What would the world be like with square tomatoes? Who knows? Well I'll tell you who knows, genetic engineers. Well, I was asked to investigate and invent something that genetic engineers

could do. So I immediately thought of square tomatoes. Just think how much easier it would be to fit them into packaging.' Kate Lingley (yr. 7)

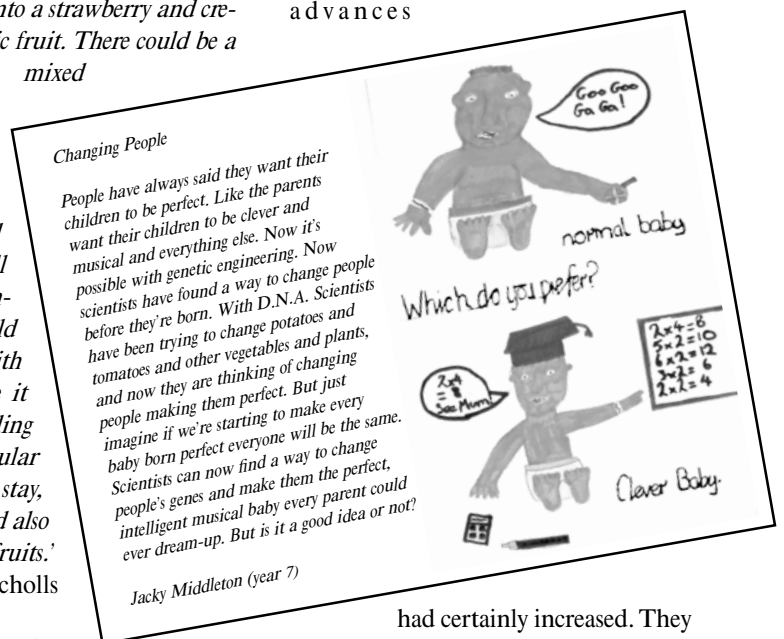
'A great gene invention would be mixed fruit genes so for example a kiwi gene would be put into a strawberry and create a new exotic fruit. There could be a banana gene mixed

with an apple gene. For the safety of fruit pickers the fruits would grow on small trees. This invention would not interfere with nature because it would be adding on. The regular fruits would stay, but there would also be exotic fruits.' Elizabeth Nicholls (yr. 7)

The children then went on to discuss various moral issues raised by the work of genetic engineers. When given the opportunity later in the

day to report to their classes on this session the children were keen to pass on both their newly acquired knowledge and their now strongly held opinions.

Their appreciation of the complexity of the problems created by modern advances



had certainly increased. They had also become aware that science is not the straightforward subject they had previously believed with not every discovery being universally welcomed. ◇

Open Day

John Innes Centre
Sixth Form Open Day

Wednesday 26 April 1995

Teachers are invited to attend whether or not they are accompanying sixth formers. Contact Vanessa Billings at JIC. Telephone 01603 452571

Feed the Earth

Paul Dark
Earlham High School

Problem: how could I tie in a flexible learning unit with industrial applications, meet the needs of Sc1 investigations and get some funding for it as well? It seemed quite difficult until I heard about two things simultaneously; the first was the TSN that could put me in touch with scientists working on real projects; the second was the Toyota Science and Technology Fund that supports the sort of work that I was trying to do. After bidding for the project funds from Toyota and, through the TSN, being put in touch with Dr. John Flintham from the John Innes Centre, the work began. 'Feed the Earth'—a research project for a class of Year 11 students that focuses on the salt tolerance of different varieties of



Measuring salinity: John Flintham with Yr 11 students Emily Lovel-Badge and Rachel Groom.

Another Open Day

University of East Anglia

Saturday 13 May 1995

Many labs will be open with hands-on activities and demonstrations for everyone. For teachers and certain other visitors there will be guided tours of the research labs.

TSN beyond Norfolk

Word has spread about Norfolk's TSN. Requests for information have come from many sources around the country, and it looks as though similar networks may begin in Reading, Oxford, Edinburgh and York.

wheat—began to take shape.

The now nearly-completed project was designed to ensure that the criteria for Sc1 was met. The successful bid for funding has even allowed us to offer some prize money for successful students. The project ran for seven weeks and included a visit to the John Innes Centre to see the sort of work that goes on there, then a seminar led by John Flintham outlining the scope of the project. The students sorted themselves into groups and were given five tasks to complete. Each task was part of the overall project and they had grading criteria for each task. The students had a fixed budget to work to and had safety inspections, 'fines' for poor experimental practice and 'costs' for any consultancy information they wanted. We set aside one period a week for the practical work and three other periods to complete the written and research work.

John Flintham visited the pupils working on the project and gave help where needed. In a short time results will be collected, analysed and by the beginning of next term the projects will be assessed by John Flintham, myself and the UEI (Understanding Education and Industry) teacher from Earlham. Whether they have hit all the goals I set for the project remains to be

Museum Science. Can you help?

Faye Kalloniatis
Norfolk Museum Service

At the moment schools use museum visits mainly to help with history, leaving the science potential of the collections largely untapped.

The Norfolk Museums Education Service is very keen for schools to use its museums as a science education resource and so I am beginning a project to encourage this...but I need help.

I would like to set up a working group to look into how schools could best use our collections and as the TSN has both teachers and scientists it seems an ideal place to look for members: teachers with their educational expertise—their knowledge of the National Curriculum and of pupils—and scientists with their specialist knowledge and practical information.

Although the project will be based at the King's Lynn Museums, any subsequent material that is produced can potentially have a county-wide application through the Norfolk Museums Service. The working group needs a mix of teachers and scientists, but they need not necessarily be partners. If you would like to know more, or if you are interested in joining the project, please contact me on 01553 773450 and I will contact you by letter early in May. Please, if you can, help influence what happens with science in museums. ◇

seen but the main one of motivation has certainly scored high, with most of the pupils showing real enthusiasm for the work. ◇



Simon Lewis measuring wheat growth.

New Members

Welcome to new TSN Partners:

- Ms. Tessa Payne, Science Coordinator at S. Harwood Middle School and Miss Jacqueline Brown, Research Scientist at IFR
- Mrs Yvonne Gafford, Biology Teacher at Thorpe House School and Dr. David Baulcombe, Senior Scientist at JIC
- Mrs. Denise Bristow, Teacher at Bawdeswell Primary School and Mr. Dave Hart, Research Scientist at IFR.
- Mrs. Marion Fizgibbon, Science Coordinator and acting Deputy Head at Angle Road First School and Dr. Ruth Boetzel, Research Scientist at IFR.

There are TSN applications from teachers at Bignold Middle School (Norwich), Drake First School, (Thetford) and Manor Field First School (Long Stratton). These teachers are waiting for scientist partners. If you know of a scientist who might be interested in any of these partnerships, please let Frank Chennell or Keith Roberts know.

Lost contact with your partner?

Sometimes messages don't arrive. One scientist left telephone messages for his teacher partner with the school receptionist three times, but not one of them were received. Meanwhile the teacher, thinking his scientist partner had lost interest, was reluctant to contact him to arrange future meetings. Both thought the partnership had foundered, until they were put them in touch with each other again.

One of the reasons for partners supplying a home telephone number is because messages left for a third party to deliver often go astray. That is why TSN members have been asked to supply home telephone numbers. If your partner does not want home calls to be made, he or she would not have given it.

If you are waiting in vain for your partner to contact you the chances are that your partner is doing precisely the same thing, so why not give it a try: lift the phone and talk to your partner. ◇

Contributions to TSNews

If you have something to say, something that's worked well—or failed miserably—it would be good to know, don't be shy, send it for the next newsletter. Illustrations or photographs are also helpful.

Teacher Fellowships

There are several fellowships available for primary or secondary level teachers in Norfolk this year. Teachers need not be TSN members.

The fellowships provide a four-week experience for a teacher in an active research laboratory in Norfolk. Most—or all—of this time is likely to be during the summer holiday, but this is negotiable; the time could be split into two or three shorter spells. The specific goal of each fellowship is also negotiable, but a major aim of the experience is to engage the scientific expertise of a research group with the educational skills of the teacher. In this way the teacher devises useful

investigations or kits that can be taken back to use in the classroom. Other benefits include providing a glimpse of the day-to-day practice of science, and experiencing the hands-on, problem-solving activity that is the essential fun ingredient of the work of professional scientists. We hope that teachers will be able to carry this insight and enthusiasm back into the classroom.

Each fellowship is funded at £800: £300 as stipend and expenses for the teacher, £300 for the teacher to take back to use in the classroom or for kit development, and £200 for the host laboratory.

The fellowships are open to all who teach science at primary or secondary level.

If you would like to talk over possibilities first, please telephone Frank Chennell at TSN on 01362 668 337. Otherwise, write to Keith Roberts (John Innes Centre, Colney, Norwich NR4 7UH) mentioning the probable dates when you would be able to take up the fellowship, what, if any, science background you have, and any preferences you might have for a science area to work

in. ◇

Teacher Scientist Network

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