

In August 2002, a crack team of eleven Cambridge science students, who aptly called themselves CHaOS, hired a particularly large van and headed southwest, chasing the setting sun...

Luckily for the Copernican world view, they failed to catch it. However...



**1 week,  
85 kiwi fruit,  
28 kilos of cornflour,  
9 litres of lemon juice,  
1.5 kilos of baking soda,  
15 kilos of dry ice,  
20 litres of liquid  
nitrogen,  
35 metres of damp proof  
course,  
365 metres of gaffer  
tape,  
55 square metres of  
builders' polythene,  
7.6 metres of waste pipe,  
45 square metres of  
laminated floor underlay,  
2 dismantled desks,  
7 kilograms of chocolate,  
and 825 miles later ...**



...they had visited 2 church halls, a theatre, a town hall, a village hall and a bandstand, building bridges, extracting DNA from kiwi fruit, and stopping glow sticks. On top of this they survived 6 trips to Staples, 14 trips to B&Q and managed to get several thousand pounds worth of equipment past the University security guards. This must have amounted to at least a tonne of stuff that was transported backwards and forwards across Cambridge in, on and hanging off a Nissan Micra. Somewhat surprisingly it seems that the group also had time to entertain and educate around 700 unsuspecting members of the public! 99% of them even claim to have enjoyed it, with 95% willing to be victims of CHaOS in the future!



**Nat explains conservation of momentum using an air table at Crash!Bang!Squelch! 2002**

Every year, a group of student scientists in Cambridge, keen to show that science is fun and relevant, organise a hands-on National Science Week event called Crash, Bang, Squelch!, now in its sixth year. In 2002 it attracted over 3000 visitors of all ages in just 6 hours! In a pub afterwards, certain organisers (of questionable sanity) were bemoaning the fact that they had put all that work for just one day. Cambridge has many science events and, having grown up in provincial towns, Dave and Sarah decided to take part of Crash, Bang, Squelch! further afield. Hence Cambridge Hands-On Science and the tour of the Southwest were born!

“ Your event was fantastic! ”

For the next few months, Dave and Sarah bumbled along, trying hard but not really expecting the tour to be feasible. They had started to get a little concerned when not only had Sarah survived finals, and Dave was continuing his PhD, but they also had insurance cover, sponsors and eleven student volunteers!

“ Excellent for all in our party. Explainers very, very good even with us not so clever adults. Thank you. ”



Kingsbridge  
 Wednesday 28<sup>th</sup> August

Exmouth  
 Thursday 29<sup>th</sup> August

Preston  
 Monday 26<sup>th</sup> August

Crossways  
 Saturday 24<sup>th</sup> August

Swanage  
 Sunday 25<sup>th</sup> August

Lymington  
 Friday 23<sup>rd</sup> August



The toys (experiments) were begged, borrowed and built over the next month or so. The team enjoyed late night trips to various departments to extract microscopes, air conditioning fans and air compressors, amongst other things. However, it was the building that was responsible for the most sleep deprivation, and the fact that the society owns a power sander, lots of drainpipe and various bits of desk!

“They're brill and don't need improving.”

After two weeks of intensive building activity in Dave's living room, whilst his cleaners were very conveniently on holiday, they had built ...



**Fig. 2: DIY darkrooms, for 2-way mirrors**

**Fig. 1: Arch bridge building**

- *A laminate floor-underlay arch bridge [Fig. 1]*
- *Economy curtain rail train tracks with polyurethane foam wheels [Fig. 4]*
- *A drainpipe xylophone*
- *A two-way mirror complete with damp-proof coursing black-out curtains [Fig. 2]*
- *A vacuum cleaner powered fluidised bed*
- *Bike pump bubble columns*

...and obtained a somewhat strange reputation in Cambridge B&Q.

“...enlightening, especially the DNA experiment...”



Other favourites were the spinning chair, the medical surgery (complete with Fred the friendly skeleton!), extracting DNA from kiwi fruit, cornflour [Fig3], floating bubbles on carbon dioxide, the paper tower challenge, levitating beach balls, what happens to glow sticks and locusts in the cold, water rockets, mini explosions, liquids that behave like spaghetti and the really cool (-196°C) show.

**Fig. 3: It's a liquid and it's a solid!**



**Fig. 4: Why trains should stay on the tracks**

# Operation CHaOS



The tour would arrive in town late at night, erect tents in darkness and leave at the crack of dawn. In fact their presence may have gone unnoticed if they hadn't taken to walking around town with Fred [see figures].

“

Stayed in Kingsbridge to see it rather than going to the beach.

”

Between 9am and midday each venue went from complete chaos to comparative order as the team set up the event. For the next five hours visitors of all ages enjoyed exploring scientific principles for free through fun hands-on experiments with lively student demonstrators.

## **Fred and Dave in Swanage**

The visitors were many and varied. Some came after reading newspaper articles about the tour or hearing about it on the radio. Others spotted flyers and posters around town. Yet more walked past and were attracted by the sheer chaos or were accosted by Fred on the beach!

“

This is a really well thought-out event. Well done everyone.

”

After the event, the team faced the task of returning the chaos to whence it came (a large white van), and then travelling to the next venue.



**Fred and Heather  
- the publicity  
team, in Exmouth**

# Views of CHaOS are excellent

Feedback from 128 groups (amounting to at least 350 people) was incredibly positive and CHaOS attracted an estimated 700 people in total.



- ***99% of visitors had an enjoyable time and 81% had a very enjoyable time.***
- ***98% learnt at least something and 78% claimed to have learnt a lot.***
- ***58% of visitors were from a non-scientific background.***
- ***68% of visitors visited science museums and exhibits once a year or less.***
- ***A staggering 95% of visitors would come again.***

The written comments were also fantastic, with the only major complaint being a shortage of advertising.

“ Cambridge students delightful  
and very good with children ”

The success of the tour was probably due to a number of factors, not least that the style was very personal. Explanations were adapted to suit the participants and demonstrators were enthusiastic and welcomed questions. People also appreciated the effort the team had put in voluntarily to bring the tour to them.

“ Thanks so much - wonderful  
Please come again. ”

The team are now even looking forwards to future tours, although there are disagreements as to where CHaOS should descend next year.

## The route

The CHaOS tour 2002 travelled along the south coast of England at the end of August, putting on events in the following venues.

23rd Lymington - St Thomas' Church Hall

24th Crossways Village Hall

25th Swanage - The Mowlem Community Room

26th Preston (nr Weymouth) - St Andrew's Church Hall

28th Kingsbridge bandstand

29th Exmouth Elisabeth Hall

## The Student Team

David Ansell, Anne Cook, Rachel Cooke, Sarah Crisp, Rachel Furley, Graham Furley, Selina Hawkins, Nat Johnson, James Kermode, Tom Williams, Heather Zwarferink and of course Fred!

