In this issue

Is summer becoming more uncomfortable over major cities in India?

Hardly anyone will deny that he or she finds every summer more uncomfortable than the previous one – and most will believe that this is because they are becoming older. However, the increasing evidence in favour of global warming also suggests that summers may indeed be hotter now than they were in the past. It would therefore be quite interesting to find out from the meteorological records if there have been any noticeable changes in the summer weather. This is exactly what Srivastava *et al.* have done, as described by them on **page 342** of this issue.

To begin with, it is not just the temperature, but the relative humidity also which affects the level of discomfort felt by us (the observant ones would have noticed that the temperature seen on the thermometer in a pleasantly cool air-conditioned room is quite often not much lower than that seen outside!). Srivastava *et al.* have therefore used both the maximum daily temperature and relative humidity values for April, May and June from 1969 onwards at six major cities in India (New Delhi, Mumbai, Kolkata, Chennai, Pune and Bangalore) and have carried out a detailed statistical analysis of the trend shown by the 'discomfort index' (which combines both temperature and relative humidity).

Contrary to what one would have expected, they find no significant change at all in April for any of the cities! For May and June, they find that it is only Mumbai that shows a significantly increasing trend. Thus, on a monthly scale, summers do not seem to be becoming uncomfortable in any of the other major cities in India. On a finer scale of pentads (five day period), a significantly increasing trend is seen for Bangalore in May, and a decreasing one for Pune. Interestingly, it is only the 'discomfort index' that shows statistical significance; the effect is not seen when the temperature or humidity patterns are analysed separately.

The authors, however, point out that there may be several pockets in the different cities where locally increase in the discomfort due to 'heat islands' could be very high. They recommend more detailed and simultaneous observations in different parts of the cities, using mobile observatories, for obtaining a more comprehensive and realistic picture of this important and interesting phenomenon.

N. V. Joshi

Micoemulsions

Microemulsions are the important members of a family of objects broadly known as colloids and because of their free-floating properties have many interesting applications. Unlike true solutions, interacting molecules in a colloidal solution have energy more than the thermal energy, kT, which is mainly responsible for this free-floating behaviour. de Gennes describes them as ultradivided matter (*Nature*, 2001, **412**, 385). They have tremendous commercial applications from free-flow of oil through pipes across the continent, as a coat over a necktie to make them repulsive to food stain or as exotic a thing as lipsticks. Moulik and his group at Kolkata, have been working on microemulsions since several decades and have pioneering contributions in this area particularly with respect to thermodynamics of the system. In an accompanying article (**page 362**) they have mentioned that as a consequence of many potential advantages of microemulsions due to clarity, high stability and ease of preparation, there is an increase in interest to use these microemulsions as solvents, body-care products, drug delivery, etc. However, authors have reasons to believe that thermodynamics studies on the formation of ternary and quaternary systems of microemulsions, despite their importance have not been adequate. On the other hand, the energetics information is required for proper understanding of the system. In this article, they have attempted to carry out few elegant experiments in order to follow phase behaviour of few composite, pharmaceutically useful microemulsions.

Dipankar Chatterji

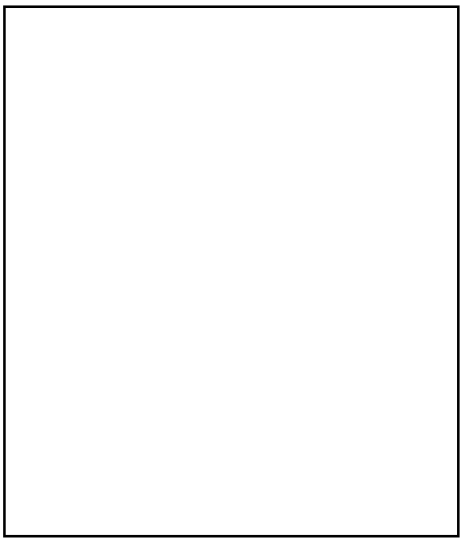
The fiery Siberian event

Remember the comet, Shoemaker-Levy, which bombarded Jupiter in July 1994? Many people believe that an analogous event, although not of the same magnitude, may have occurred in central Siberia. According to them, a large stony asteroid exploded over Tunguska, a remote area in Siberia on 30 June 1908. This event, marked by trembling of the ground and blowing of wind, destroyed a forest area, measuring half the size of Mumbai city and generated large-scale fire, resulting in scorching of the ground. The event also sent out a shock wave that was recorded around the world. 'Lights nights' were reported from many parts of Europe and Asia, on that day and subsequent days 'during which shadows were cast, and people could still read newspapers at midnight'. Several teams of scientists had visited the

site and most of them concluded that this phenomenon was due to a giant meteoritic impact. The meteorite impact scenario was also apparently consistent with the eyewitness observations. Despite these assertions, doubts lingered on the possible cause of this event, and it has always been a mystery as to what exactly happened in Tunguska area on that day.

Later, the event became a part of pseudoscientific kitsch that used to appear as a 'story' once in a while in tabloids. Now we seem to have some scientific answers to the puzzle. On **page 399** of this issue, Wolfgang Kundt of the Institute of Astrophysics at the University of Bonn, combines a wide range of observational data and mathematical derivation, backed by excellent deductive reassigning, to blow holes in the extraterrestrial impact interpretation of the Tunguska explosion. His interpretation, based on the site conditions, circumstantial evidence and on the mathematical estimates of mass and energy content involved in this process, suggests that the Tunguska event could have been generated by kimberlite pipe intrusion driven by volatiles, resulting in the ejection of natural gas. In short, the evidence suggests that the Tungaska event appears to be related to some sort of volcanic blow-out, rather than a meteoritic impact. Wolfgang Kundt mentions about some information available from seismograms of this event, obviously from analogue recorders, which are of poor resolution. In a similar situation today, we would probably rely on the digital seismic records to discriminate the frequency content and energy levels between a meteoritic implosion and a volcanic explosion. With a robust global network in place, today it is possible to derive from the seismic records, the impact energy of the extraterrestrial bodies entering the earth's atmosphere.

C. P. Rajendran



Anna Mani 1918–2001

Anna Mani was the president of the Current Science Association from 1989 to 1994. It was during this tenure that one of the present editors (S. Ramaseshan) was appointed to *Current Science* and it was also at her initiative that many changes in content and format of the Journal were initiated. We hope to publish an obituary in one of the coming issues.