

## In this issue

### Zero-pressure Balloons

*TIFR crosses a milestone*

Making balloons that can carry a thousand kilograms of scientific payload fifty kilometres up into the sky is not child's play. The material has to be light and strong enough to carry the suspended payload under the harsh atmospheric conditions. And there has to be a system to monitor the trajectory, coordinate with airport authorities so that pilots can avoid bumping into the balloons, a system to retrieve the instrumentation for the next flight...

TIFR started experimenting with materials and systems from 1956 and subsequently established a Balloon Facility at Hyderabad in 1969. In 2018, they crossed an important milestone: five hundred balloon flights!

On **page 1672** in this issue, the scientists and engineers involved in this achievement tell us about the agonies and ecstasies experienced en route. And, of course, the kind of data collection and research that can be done with the massive zero-pressure balloons. Turn to the General Article to read more.

### Women in Science

*Exhaustion and scepticism*

Cheshta Arora from the National Institute of Advanced Studies, IISc, Bengaluru examines the history of the gender issue as reflected in *Current Science*. The improvement in the sensitivity to the issue in the journal is only to shift focus from societal attitudes to institutional responsibility, she points out.

She examines the discourse on women in science elsewhere and analyses two trends – one that looks at the successes and failures of women scientists and another that hinges the arguments on notions of gender diversity, balanced development and the creative expression of women.

How does all this play out on the ground? Cheshta did an ethnographic study, interviewed women from an autonomous research organisation and a multinational software firm to understand the issue at ground level. Though

the organisations have different organisational structures, work cultures and have differences in the explicitness of gender inclusion, she finds that there is still a subconscious or implicit bias which gets reflected in institutional and societal roles in scientific careers. The effect of all this on the affect of women scientists is critical. Half-hearted women-oriented policies often lead to exhaustion rather than exhilaration among women scientists. And, within the scientific community, it transforms into scepticism about the abilities of women scientists and the efficacy of the existing discourse.

Turn to the General Article on **page 1679** in this issue to read more.

### Calamity Deaths in Odisha

*Lighting and heat waves*

26 May 2021. Odisha tackled yet another super-cyclone among other natural disasters. And the disaster management skills of the state are admirable. Under its zero-casualty policy, the state has reduced mortality due to cyclones and floods to single digits. But there are other disasters that cause deaths in the state.

A Research Article in this issue examines the pattern of deaths due to climate calamities in Odisha. The data from 2001 to 2014 show that lightning and heat waves account for almost 90% of disaster deaths. However, unlike cyclones, these events go unnoticed and are barely reported.

Male farmers and labourers between 30 and 60 years are the most affected by lightning and heatwaves. What are ways to alert and communicate with vulnerable groups? What are the mitigation measures that the state can employ to save lives?

To find out, read on from **page 1721** in this issue.

### Proterosuchus Fossils

*In the Panchet Formation*

About 250 million years ago, in the early Triassic, there lived the *Proterosuchus*, the ancestor of today's crocodiles (and dinosaurs and birds), on a huge continent called the Gondwana

supercontinent. The supercontinent broke up due to tectonics and migrated in different directions. The Indian subcontinent migrated north from the southern hemisphere and crossed the equator to collide against Eurasia. Natural calamities and cataclysms, in the meantime, wiped out the ancestors of crocodiles. Their bones were buried in sediments that kept piling up. That's how the sedimentary rocks in the Panchet Formation, about quarter of a kilometre under the Damodar valley, came to harbour *Proterosuchus* fossils.

After the middle of the 19th century, when T. H. Huxley unearthed and described bits and pieces of fossilised bones, there have been attempts to put together a complete description of the *Proterosuchus* skeleton, but samples were scanty. Now, in a Research Article on **page 1749** in this issue, you can read the description of three more pieces of the jigsaw puzzle – a part of the left humerus bone and two vertebrae.

### Protecting Seniors

*By vaccinating adults*

A large majority of Indian homes have seniors and adults of various age groups living together. The vaccines for COVID-19 prioritise the seniors. The vaccine, as per the data available, will reduce the chance of infection by 67%, transmission by 70% and mortality among the infected by 80%. Under such conditions, if we do not vaccinate the younger adults in the family who have close interactions with the seniors, even vaccinated seniors remain at risk for infection, transmission and mortality. To protect the seniors, other adults at home also need to be vaccinated, argues a Research Article on **page 1698** in this issue.

Given that vaccine production is yet to be ramped up to meet the demands of the adult population, should not this factor be considered for prioritisation in vaccine administration?

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