

## In this issue

### An Impression of Imprecision

#### *Public discourse in visioning*

Where do you see yourself 10 years from now? That is perhaps the most common question asked in an interview. There is a reason for that. What you envision you can achieve – you will at least try to achieve. This is the basis of visioning exercises. You decide where you want to see yourself in the future and then channelize available resources to reach the target.

Our nation has vigorously taken up visioning exercises in science and technology. There is an entire establishment called the Technology Information Forecasting and Assessment Council (TIFAC) that was set up in 1988 to imagine Science and Technology developments for India. With Kalam at its helm, the TIFAC first drafted the Technology Vision 2020. In 2016, the Technology Vision 2035 was unveiled.

For a huge and diverse country like India, such visioning will be fruitful only if there is discussion and debate surrounding the agendas. However, there is very little public discourse around Science and Technology visioning exercises in the country. Even within the scientific fraternity. Even given the abundance of social media platforms enabled by the Internet.

On **page 1835** read a General Article to learn more about visioning exercises and the current state of public discourse around the future of India's science and technology.

### Healthy Livestock

#### *Implications in antibiotic resistance*

In his Nobel delivery speech, Alexander Fleming called attention to the perils of both excessive and under dosing of antibiotics. His concern was that repeated exposures to the drug would make the bacteria resilient and resistant to its effect. Today, his prophecy stands true. Many bacteria have developed resistance to multiple antibiotics. These superbugs are the most common cause of difficult to treat infections.

Antimicrobial resistance is now a global problem. In India, massive public outreach programmes are trying to regulate antibiotic consumption in humans, there are practically no regulations on the use of antibiotics in animals. Livestock is given feed mixed with a cocktail of antibiotics to keep them healthy and free from infections. But only in 30% of the cases, drug dosage is therapeutic. 70% of the time, antibiotics are used at sub-therapeutic doses as growth promoters or disease prophylactic agents. This exposes the bacteria to suboptimal concentrations of antibiotics and breeds antibiotic resistance – a public health crisis.

After the 1970s we have not discovered any new classes of antibiotics. This makes it all the more important to understand the underpinnings of the current situation and exert checks on the use of antibiotics in livestock. On **page 1846** read a Review Article that elucidates the current situation of antibiotic use in animals and its effect on the development of resistance.

### Andaman under Attack

#### *Shrimp culture prone to virus*

The area around the Andaman and Nicobar islands has emerged as a choice site for shrimp farming. It has good shrimp brood stock and greater biodiversity. Moreover, there are a few reports of viral infections in shrimps from the area.

But, the absence of evidence does not mean the absence of eventuality. A new study shows that the Andamans are not pristine after all. When scientists from Port Blair and Chennai tested 175 wild shrimps from the area, they found signs of infectious hypodermal and hematopoietic necrosis disease.

Genetic studies showed that the virus completely matches those that cause the disease in Vietnam, China, Australia and the USA while the resemblance with viruses from Brazil, Venezuela and Korea was 99%. Since the Andaman Sea is bordered by Myanmar, Thailand, Malaysia and Indonesia, there is a possibility that the

infection was transferred from these areas.

Presently, India is the second largest producer of shrimps in the world, but viral diseases pose a threat to the success of shrimp farms in the mainland. Infections are the biggest threat to any animal culture facility. On **page 2027**, read a Research Communication underlining the experiments which enabled the researchers to make this discovery. The results could help formulate the necessary measures for developing shrimp farms in the Andaman and Nicobar Islands.

### Digging through Space

#### *New age archaeology*

With the exception of Indiana Jones, most archaeologists are stereotypically represented as digging through sand, working with chisel and brush. But in the context of modern archaeology, that seems archaic.

Archaeologists today rely on satellites to map their sites in real time. Researchers use advanced systems like remote sensing, geographic information systems and global navigation satellite systems for mapping archaeological sites. They use cutting edge technology to find buried sites and span human settlements across time and space. With the use of sophisticated tools, scientists can now build virtual structures of long lost buildings from the remnants of foundations.

Still others are using echolocation to find significant regions of past human settlements buried within the sea or ground. The data collected from such sites can also reveal whether the catastrophe was caused by an earthquake or by other factors. In view of these advances, scientists are proposing the establishment of a national virtual database for storing this information.

This issue of *Current Science* presents nine articles that mirror the changing face of archaeology. A more detailed account is available in the special section on **page 1858–1973**.

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