

In this issue

IIT Admissions

Will my child get into IIT?

Anxiety grips millions of parents in India around this time. And what indeed are the chances of a teenager getting into IIT?

If the parents are well educated and also rich enough to send their children to coaching classes, it is assumed that the chances increase. This belief has helped coaching industries thrive. The one in Kota, Rajasthan, has become famous. Similar industries have sprouted in other parts of India and they are very profitable for those who run them. The promise that their products will end up in IIT classrooms – is it trustworthy? Will the child get into IIT?

Teenagers are not industrial products. They respond to nurturing. So there are enough case studies of poor, uneducated parents whose children also get seats in IIT. But to what extent do case studies go against the grain of statistics?

Every year more than one million aspirants appear in the IIT-JEE examination. A General Article on **page 2079** in this issue examines the data to highlight parental socio-economic and other factors that influence the results of IIT-JEE examinations.

Neutron Scattering

A historical account

Neutrons were discovered in 1932. But to get a beam of neutrons and then to train them on to molecules to understand the forces that hold together the materials we see, to probe into the structure of matter, to create sensitive equipment that detects neutrons, to construct the mathematics needed to deduce what we cannot see by measuring the way neutrons scattered,... – all that took time.

In 1958 when Dasannacharya joined the then Atomic Energy Establishment, Trombay (now called Bhabha Atomic Research Centre) the field was in its infancy. In a General Article he describes the intellectual journey from the construction of equipment in India,

to the formation of the Asia–Oceania Neutron Scattering Association.

FeSn₂, NH₄Cl, CH₄, NH₃, liquid zinc, (NH₄)₂SO₄,... the materials used for neutron scattering experiments were quite a few. And the theoretical insights gained about the structure of such materials were equally diverse. Read five decades of reminiscences on the subject on **page 2067**.

Excitement about the Exotic

Legal dampener demanded

India is endowed with rich fish diversity. There are nearly 800 freshwater fish and about 2500 marine species. And with the flourishing international trade in aquaculture and ornamental fish, India has acquired 31 aquaculture species, 600 ornamental varieties and two species of larvicidal fish.

A Review Article on **page 2099** in this issue examines the impact of the exotic fish that escape into the wild. The article reviews the issues related to naturalization, competition for resources in the niches that were occupied by native species, colonization by the exotic, and in some cases, predation by alien species. Aquarium fish have become a threat to native edible fish.

It is very difficult to control the trade of beautiful ornamental fish with their gentle movements of exquisite fins that transfix connoisseurs' eyes and put people into meditative states. But it has become imperative to strengthen legal measures on ornamental fish trade. Because food for the soul has started stealing food from hungry mouths.

The author of the review from the Centre for Biodiversity Policy and Law, National Biodiversity Authority, makes a case for legislators and the public to take action.

Ancient shipwrecks

Teak tops as prime timber

Humans crossed oceans with ships made of wood before the days of iron and steel, fibre composites and other light weight materials. What woods did

they use? Did they prefer certain species of trees? What were the properties of wood that allow long life in salty seas, in spite of invasions and spoilage by the abundance of marine creatures?

A Research Communication on **page 2160** in this issue examines ancient shipwrecks to find answers. Until now, only five well documented wrecks of wooden ships have been found. So scientists from the CSIR-National Institute of Oceanography, Goa and Institute of Wood Science and Technology, Bengaluru, accessed wood samples from shipwrecks from a ship manufacturer in Surat, Gujarat, India.

Besides the colour, texture, grain, density, strength, stiffness and hardness of the samples, anatomical studies using thin sections can provide unmistakable clues about the identity of the species. Analysis of the timber of some of the shipwrecks showed that those built in India were made using wood species such as teak, sal, sissou and anjili.

The wood used in the shipwrecked in St George's Reef is made of the *Lagerstroemia lanceolata* species. In Aguada, Goa, it is teak. Rafters buried in the basin of the Jog River, Maharashtra, more than 1000 years ago, were made of teak. Teak, shisham and Indian rosewood were the main kinds of timber used in the shipwrecked in the *Sydney Cove* in 1797. The samples collected by the researchers gave a verdict: teak is the preferred wood of shipbuilders from ancient times.

Teak is resistant to water and worms. If it is seasoned properly, it will not crack or split. The wood is not too heavy and has good elasticity. It contains a high level of silica. So it may not be easy on woodworking tools. But it does get a beautiful polish when finished, because of its natural oils. Quinones and derivatives found in teak make it immune to termites, fungi and other attackers of wood. So a ship built of teak lasts long.

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