for encroachment of non-native species. Valuable raw material is burnt, which otherwise could have been recycled in the forest floor itself or in agriculture fields after decomposition. Fire affects soil and geomorphic processes, it volatilizes large amounts of nitrogen and carbon contained in soil organic matter and adds to the problem of global warming and ozone layer depletion. In addition, high rainfall following fire causes soil erosion and reduces water infiltration. Fire damages the habitat of several mammals, birds, reptiles, insects, microorganisms, etc. Burning in pine forests coincides with the period of resin collection, which makes the species more susceptible to fire. Once the resin catches fire, the ground fire transforms to crown fire in no time.

The practice of prescribed burning should not consider trees in isolation. Trees are a part of an ecosystem which involves various other biodiversity elements. And there are complex linkages between them; therefore the survival of species is interdependent.

Prevention mechanisms should be developed against catastrophic fires. Should we resort to this practice or find other viable options for checking catastrophic fires as well as for maintaining biodiversity of the region? One such option suggested here, practiced in some parts of Uttaranchal, is simply to collect dry matter, such as pine needles and fallen leaves. No major shift in approach is required. The personnel engaged in prescribed burning can be asked to collect dry matter. Villagers in the respective areas can be motivated to participate in this activity. Villagers may be willing to participate, as this can resolve their problem of bedding material for livestock, manure for agriculture fields and grass for livestock. Removal of dry matter promotes growth of grasses, which otherwise would get suppressed by pine needles.

This is an opportune time for the government to evolve a strategy to check recurrence of burgeoning fire incidents. A better understanding of fire effects on different forest types is the need of the hour. This will help us to develop scientifically a sound policy for fire management.

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Need for microbial type culture collection centre in South India

Biotechnology in industry and academia has attained mainstay now more than ever before. For the ever-increasing demands of food production and to meet the requirements of growing population it is biotechnology (and its different branches, e.g. agricultural, food and industrial biotechnology) which is giving a hand. As the name suggests, it needs living organisms (plants, animals and microbes) or their parts, for an end product. Due to human disturbances or natural calamities we have the danger of losing many of the organisms (whether it be plants, animals or microbes). The red data list of the Botanical Survey of India shows a list of plants which are on the verge of becoming extinct. Such plants or those plants which are medicinally important but rare to get can be preserved in the labs through tissue culture and gene banks. The gene banks will serve not only as backbone for preservation but also help in retrieving if they are completely lost from the system. Each plant species can serve as a reservoir or as a substrate for a host of other organisms including the microbes. Hence, any loss of higher plants might also reflect in the extinction of microorganisms depending on them, particularly if they are host specific[1], thus causing irreparable damage to biodiversity. While plants can be preserved through nurseries or tissue culture and gene banks, in the case of microbes, invariably it is raising and maintaining pure cultures under laboratory conditions, followed by preservation.

The invention of novel antibiotic compounds or enzymes needs a thorough screening. While a lot of money has to be spent for screening of different microbes, the establishment and maintenance of culture collection centres is a prerequisite. Most of the countries in Europe, USA and China have started patenting their inventions of novel compounds and enzymes from different organisms, while India is still lagging behind in terms of the number of such patents applied. Even though we have vast resources of biodiversity it is unfortunate that we have very few patents granted from India. Thanks to the Biodiversity Convention (Rio de Janeiro, Brazil, 1992), there is not only an awareness on the importance of biodiversity but also a spurt of activity that has started and been translated into promulgation of laws for the protection of the biodiversity resources in the respective countries, e.g. Australia. Concerns about systematics and biodiversity research in India have been expressed by several authors from time to time[2–4]. This also includes biosystematists who have become a rare species nowadays. However, there is one more aspect which needs immediate attention which is not only raising cultures of as many organisms as possible, but also properly preserving and maintaining them, so that they can be subjected to advanced screening techniques. In India very few culture collection centres have a large collection covering different groups of organisms, although a few labs in universities and other academic institutions have cultures for their research purpose while industries have selected strains of industrial importance.

For the enormity of a country like India only two culture collection centres are present, viz. IMTECH, Chandigarh

and IARI, New Delhi whose collections include all major groups of microorganisms. In southern India there is no culture collection centre on par with IMTECH, Chandigarh. For the purpose of logistics and also to cater to the needs of research labs and industries it is important to establish a type culture collection centre located in South India. In addition it would be prudent to have a centre like National Chemical Laboratory, Pune alongside, so that screening and various other analyses can be made.

Basic research has always remained a backbone for other branches of science, and biology is not an exception. Properly preserved specimens to refer to or for verification at a later date is equally important (maintaining herbaria). Thus a culture collection centre with associated herbarium is urgently needed, preferably in South India, which will serve as a nodal agency for the supply of cultures to CSIR and other labs of Govt. of India. Hence it would be prudent to establish a culture collection centre with state-of-the-art facilities in the southern region, although having 4 or 5 culture collection centres spread over different parts of India would be ideal. Such centres will also serve as back-up for cultures, if any damage to cultures takes place due to accidents or other reasons at any other centre.

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Wound healing properties of latex

The contribution of Thankamma[1] is interesting. It contains a detailed description of the author's experiences with healing properties of latex during her experiments on wedge grafting. The statement that the rubber tree produces latex in defence against fungal and insect attacks recalls to this reader's mind Nature's inbuilt defence mechanisms using colour, texture and morphology of leaves and bark, production of chemical repellents, etc. The author takes note of the necessity of detailed studies on harmful effects of HCN content of latex.

It seems that pharmaceutical companies have started using the healing properties of latex through their health-care products in the form of bandages. They may not explicitly attribute the benefit of usage to latex, but indicate that it contains natural rubber latex. It is quite possible that such products are based on knowledge of healing properties of latex. For example, the multinational company 3M, operating from USA markets such bandages for first aid under the trade name Nexcare. There may be many more such products available in the local market. Analysing such products, which are readily available across the counter, for HCN may give us advantage in terms of time and money. At the same time it serves our research interests and gives a definite direction for further studies.

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Could Phata Byung, Uttaranchal landslide be prevented?

Landslides, one of the natural catastrophes, always cause a major problem in the Himalayas by killing hundreds of people every year, besides damaging properties and blocking communication links. Most of the terrains in mountainous areas have been subjected to slope failure under the influence of a variety of terrain factors, and triggered by events such as extreme rainfall or earthquake. The frequency and the magnitude of slope failures can increase due to human activities such as deforestation or urban expansion. The problem of landslides becomes more aggravated, especially during the rainy season, though the main causative factors for the instability are often geological and geomorphological in nature. A major project work on Landslide Hazard Zonation (LHZ) mapping for the tourist routes of Uttaranchal and Himachal Pradesh, Himalayas was successfully completed in December 2000 with the Department of Space as nodal agency. The maps were generated using remote sensing and GIS techniques. A total of 15 geological and triggering factors which were mapped from satellite and other ancillary data using visual interpretation techniques and supported by field information were integrated in GIS environment. Customized software in the Arc-info environment was used to generate hazard and management maps for the tourist/pilgrim routes. An atlas containing the landslide hazard and management