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

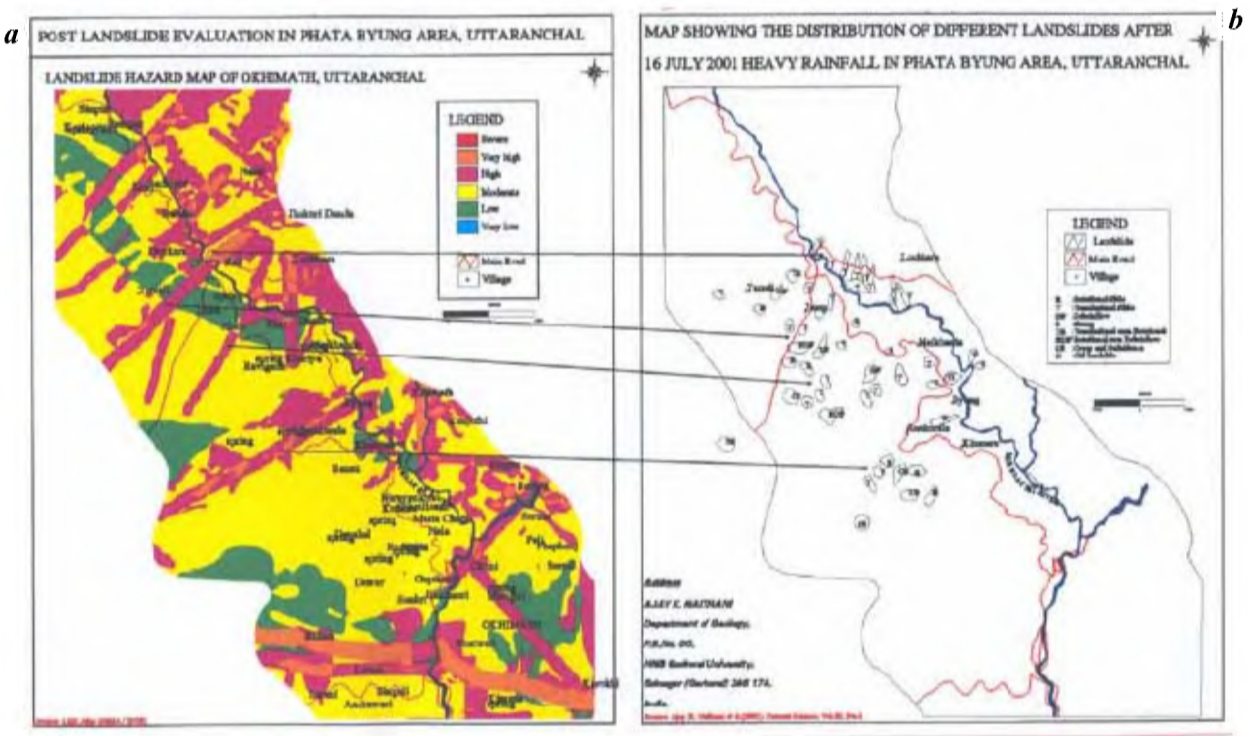

Figure 1. ***a***, Pre-landslide hazard map; ***b***, Post-landslide distribution map after 16 July 2001.

map was brought out for the various implementing agencies in 1 : 25000 scale. Two volumes of atlases were brought out with volume 1 containing maps of Uttaranchal and volume 2 containing maps of Himachal Pradesh. The landslide hazard map depicts six hazard classes, i.e. severe, very high, high, moderate, low and very low assigning higher wavelength colours to the high hazard classes and lower wavelength colours to the low hazard classes in the map (Figure 1). Landslide management maps were generated taking into consideration the different hazard classes. As landslides affect mainly the land use/land cover, causing great loss to human beings, stress has been given to formulate the management rules taking into consideration mainly the land use parameters along with other related parameters. Accordingly, management maps have been generated.

On 16 July 2001, heavy rainfall due to cloudburst in Phata Byung area of Rudraprayag district, Uttaranchal, triggered more than 200 landslides and killed 27 people. Normal life in this area was severely affected by these slides. Naithani *et al.*[1] carried out a detailed landslide inventory survey and published a Landslide Distribution Map of the area 1. This map provided us an opportunity to verify the Hazard and Management map prepared in the LHZ project for this area (Figure 1). It is seen that the most landslides have happened in the high and very high zones of Landslide Hazard Zonation map (Figure 1). The Landslide Hazard zonation map was published in December 2000 and the landslides have happened after heavy rainfall, i.e. on 16 July 2001. The landslides were mostly rock falls and debris slides formed due to planar, wedge and rotational failures. They are seen mostly near the fault buffer identified in the LHZ map prepared prior to this event. The LHZ map could not predict the type of failure but could accurately predict the probable zones for the failure. For the same area, management practice was also suggested under the LHZ project. Probably the effect of these landslides could have been reduced if those management practices were followed for this area as well.

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