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NEWSLETTER

ON

ETHNOBOTANY TOWARDS SUSTAINABLE LIFE STYLE FOR ENVIRONMENT (LIFE)

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INSTRUCTIONS TO CONTRIBUTORS

ENVIS Resource Partner on Environmental Biotechnology publishes two volumes (4 Nos.) of news letter in a year (**ISSN: 0974 2476**). The articles in the news letter are related to the thematic area of the ENVIS Resource Partner (see the website: **http://deskuenvis.nic.in**).

The format of the article as follows:

1. Font should be Times New Roman and font size to be 12 in 1.5 spacing with maximum of 4-5 typed pages.
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Articles should be sent to
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EDITORIAL

Ethnobotany is the study of plants and their relationship to humans and their practical uses through the traditional knowledge of a local culture and people. The simple meaning of ethnobotany is investigating of plants used by societies in various parts of the world. It can help us better understing of natural resources.

Mission Lifestyle for Environment recognises that Indian culture and living traditions are inherently sustainable. Mission LiFE seeks to channel the efforts of individuals and communities into a global mass movement of positive behavioural change. Ethnobiology can contribute to the future of humanity and other life on earth.

Behavioral change of individual people & Make it a mass movement can save our Environment. It will also help in achieving Sustainable Development Goal of a Country.

The present issue of newsletter is provided with a very pertinent topic on Ethnobotany, A Traditional Tool of Healthy Life – An Overview. The theme of this newsletter is Uses of plants by ethnic people. The uses of plants were also discussed elaborately in the article.

Prof. Kausik Mondal

IN THIS ISSUE:

Ethnobotany, A Traditional Tool of Healthy Life – An Overview

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Abstract

Ethnobotany deals with the traditional knowledge of ethnic people concerning with plants and their different uses. J. W. Harshberger and Richard Evans Schultes made pioneering work of ethnobotany worldwide whereas S. K. Jain explored ethnobotanical concepts in Indian perspectives. However, in Charak Vedic literature (Atharvaveda and Rigveda period) different medicinal plants area units were mentioned. Various indigenous people communities, scattered in different countries has their own culture and they use different plants in various way. They explore plants to fulfill their various needs such as food, medicine, fodder, fire and cordage, pesticides, gums, reins, dyes, perfumes, different cultural activities and so on. This traditional knowledge has to conserve scientifically to live healthy and wealthy.

Keywords:

Ethnobotany, traditional knowledge, plants, indigenous people, sustainable lifestyle.

Introduction

The word, Ethnobotany is a blending of two terms 'ethno' which means the study of plant culture especially on indigenous aspect and 'botany' which means the overall study of plant species. Therefore, Ethnobotany is a knowledge based on the linkage between plants and folk (Birhana *et al*., 2015). Subsequently Schultes (1962) defined ethnobotany as "the study of the relationship which exists between people of primitive societies and their plant environment". J. W. Harshberger (1895) and Richard Evans Schultes made pioneering work of ethnobotany worldwide whereas S. K. Jain (1986) explored ethnobotanical concepts in Indian perspectives. Ethnobotany is undoubtedly, a multidisciplinary subject. Multidisciplinary approach among the different related subjects like anthropology, medicine, botany, geography, archaeology, economics, linguistics, pharmacology and landscape architecture represent the modern ethnobotany (fig.1).

A large proportion of people from India and other countries are dependent on their healthy base of natural resources from their own surroundings for well being. The ethnic people use various plants as food, traditional medicine, fodder, dyes, environmental friendly pesticides etc. from very ancient time. After proper scrutiny, this rich traditional knowledge of ethnic societies indicates how very valuable this traditional knowledge of academic as well as practical uses of the world's flora could benefit the mankind in several ways. Ethnobotanical information represents best avenues for screening new economic plants for food, medicine etc, as well as for gene pool source (Cunningham, 1992) for the development of agricultural and medicinal crops (Mukherjee and Moktan, 2021). This article aims to highlight the issues related to ethnobotany, contributions for healthy life style and future perspectives.

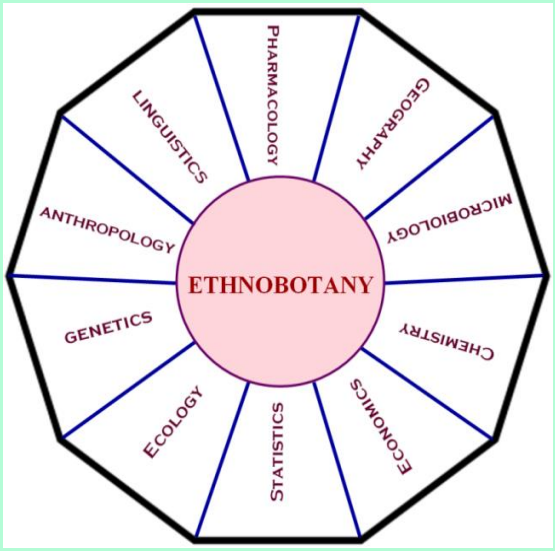

Fig.1. Interrelation of Ethnobotany with different branches of sciences.

The History of Ethnobotany

The term ethnobotany was first coined worldwide by J. W. Harshberger in 1885. Harshberger, (1895) accounted a considerable ethnobotanical study, including excursions to Mexico, North Africa, Pennsylvania, and Scandinavia. However, ethnobotany did not become a well-known science until Richard Evans Schultes began his trips into the Amazon. In India it was S. K. Jain (1986) from NBRI, Lucknow, affectionately known as 'Father of Indian Ethnobotany' who made pioneering investigation in Indian ethnobotanical perspectives.

However, ethnobotany has much older origins in the first century AD, when a Greek physician, Pedanius Dioscorides produced De Materia Medica which was an elaborate botanical essay listing the medical and gastronomic characteristics of nearly 600 Mediterranean plants (Alexiades, 2003). A list of some of the important Indian treatises is presented in two Vedic periods *Rigveda* and *Atharvaveda* where 148 medicinal plants area unit enclosed. In Charak Vedic literature, 400-450 medicinal plants area unit were mentioned. In trendy period's Indian medicinal plants by Kirtikar and Basu (1935), where 1775 plants have enclosed a gloss of Indian medical plants by Chopra and a few others have identified about 3500 medicinal plants (Mitra and Mukherjee, 2015). Thus, recently our gift day data of Indian pharmacological medicine accounts of nearly 3500 species below varied crude medicine each of endemic and exotic origin (Rist and Dahdouh-Guebas, 2006). A glimpse of Indian Ethnobotany (Jain, 1981) is that the first book dealing with Indian Ethnobotany.

Indigenous and ethnic community

Indigenous people are the original inhabitants of their lands and they uniquely know how to live in harmony in nature. More than 300 million indigenous people are scattered in around 70 countries. Majority of these people are largely depending on the forest for their very survival and live. Each group of these indigenous people has their own culture and they use different plants in various way. At the same time, they protect and conserve the forest and plants in their own style. There are about 550 tribal communities belonging to 227 ethnic groups from 6 different racial stocks in India (Chavda *et al*., 2022). The great thinker and writer Rahul Sanaskityan remarked about the indigenous societies appear to be very relevant here – 'The underdeveloped and uncivilized forest people have to carry out the burden of the civilized, developed people'.

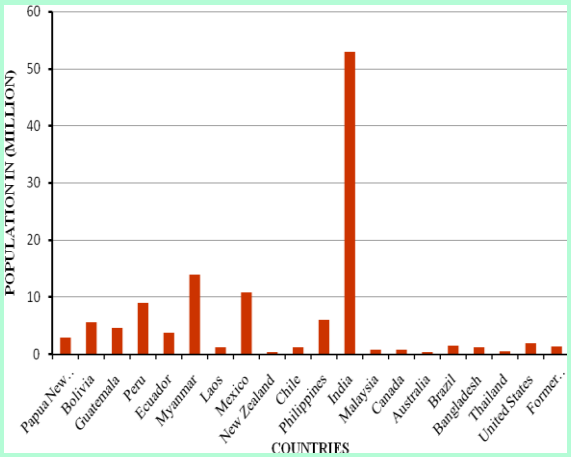

Fig.2. Estimated population of Indigenous and Ethnic people in some countries. (**Source:** *Worldwatch Institute Paper, 1993*)

Uses of plants by ethnic people

The ethnic human societies use different plant species from ancient time. Initially the ancient man used plants as food and later they tried to find out the other uses of plants. They explore plants to fulfill their various needs such as food, medicine, fodder, fire and cordage, pesticides, gums, reins, dyes, perfumes, different cultural activities and so on.

Food

Several ethnobotanical studies conducted all over the world has brought to light that a number of wild plant species are used by various ethnic societies to meet there nutritional requirements. In addition to the main cereals i.e. rice, wheat and maize there are lot of other edible plants which are consumed by different indigenous people (Saha, 2014). The mystery of their

healthy life is attributed to those wild edible plants. More than 3,900 wild plant species used as food by different tribal peoples in India (Chhetri *et al*., 2005; Dafni *et al*., 2005; Dikshit *et al*., 2016). Few very important edible plant species are *Alpinia galangal, Amaranthus spinosus, Bambusa spp., Bauhinia acuminate, Cycas pectinata* (Gymnosperm) *Calamus erectus, Cassia tora, Botrychiumternatum* (Fern), *Centella asiatica, Diospyros racemosa, Embelia nutans, Embeliaribes, Euphorbia hirta, Fagopyrum esculentum, Fagopyrum cymosum, Ficus glomerata, Ficus religiosa, Ficus bengalhensis, Gnetum gnemon* (Gymnosperns), *Grewia hirsuta, Hydrocotyl javanic, Aloe vera* and others. Various parts *viz*. root, flower, young shoot, seeds, leaves, fruits, fronds, grains etc. of different plants in addition to the whole plant are used by the ethnic community.

Medicine

After fulfilling the primary needs like food and shelter, men has sought for a suitable remedy among plants to cure various diseases and for health care from the time immemorial. Traditional medicine is defined as indigenous medicine that is used to prevent diseases and maintain healthy based on experience and believe. More than 70% of rural people of India use traditional plant based remedies for immediate healthcare requirements (Alves and Rosa, 2007; Bhodiwal *et al.*, 2022; Sharma and Kumar, 2013). Different tribal groups of people of different corners of the world use folk medicine to defend diseases. The use of a large number of medicinal plants is mentioned in Ayurveda, Siddha and Unani system of treatment (Ibrahim, 2016; Uniyal, 2006). Different parts *via.* root, leaf, bark, seeds, fruits, etc. and whole plant of various medicinal plants are used to treat a wide range of disease like cough, fever, skin disease, sexual problem, rheumatic pain, eye infection and so on and even cancer (Ansari and Inamdar, 2010; Karunamoorthi, 2013; Sajem and Gosai, 2006). Following are some important wild plant species traditionally used by the ethnic societies of Himalayas for their healthcare.

Table – 1. Name and uses of some important plant species with medicinal values.

Sl. No	Scientific name of plants	Common/ vernacular name of plants	Plant products with medicinal value
1.	*Aconitum heterophyllum*	Aconite	Dried root used in acute diarrhoea and dysentery and also in high fever.
2.	*Agrimonia eupatoria*	Common agrimony / Sticklewort	Flowers used to regress liver enlargement. It is also used as a blood purifier.
3.	*Arnebia benthamii*	Himalayan Arnebia	Flower used as wonderful cardiac tonic for heart patients.
4.	*Artemisia maritima*	Sea wormwood	Foliage is used to eradicate tapeworms and roundworms in children.
5.	*Atropa acuminata*	Indian belladonna	Root paste used in asthma and whooping cough.
6.	*Colchicum luteum*	Suranjan	Corm used in piles and in chronic body pains. Dried seeds are used in headache.
7.	*Delphinium denudatum*	Jadwar	Root poultice used in rheumatic pains.
8.	*Eryngium caeruleum*	Eryngium / Eryngo	Root powder rubbed over weak limbs to give strength & vigour.
9.	*Euphrasia officinalis*	Eyewort	Leaves and aerial parts used to cure eye infections
10.	*Fritillaria roylei*	Kakoli	Considered useful in 80 kinds of health problems. Fresh bulbs used as cardiac tonic.
11.	*Geranium wallichianum*	Wallich Geranium	Roots used in rheumatic pain and fever.
12.	*Inula racemosa*	Pohkarmool	Root used in joint pains and seed oil to promote healthy growth of hair.
13.	*Onosma hispidum*	Ratanjot	Tubers used in urine trouble and flowers to check diarrhoea.
14.	*Plantago major*	Great Plantain	Seeds with sugar used to control

			diarrhoea.
15.	*Podophyllum hexandrum*	Himalayan Mayapple	Root extract is given to regress any body tumour.
16.	*Picrorhiza kurroa*	Picrorhiza / Katuka	Root is used in gastrointestinal complaints, jaundice & loss of appetite.
17.	*Rheum emodi*	Rhubard	Powered root used with mustard oil for joint pains.
18.	*Senecio jacquemontiana*	Senecio	Fresh root extract used as 'nervine tonic' & dried roots in joint pains.
19.	*Salvia campanulata*	Himalayan Sage	Infusion of herb used to darken hair and stimulate growth.
20.	*Valeriana wallichii*	Indian Valerian	Root extract used as 'nervine tonic' and dried root powder as antispasmodic in children.
21.	*Adhatoda zealanica*	Vasaka	Leaves, flowers and wood ash used in cough, cold, asthma & tuberculosis.
22.	*Angelica glauca*	Angelica	Root gives strength and vigour, used for women.
23.	*Asparagus adscendens*	Asparagus	Root bark used as wonderful tonic.

Table – 2. Exports of medicinal plants from India.

Plants	Product	Tonnes	Value in US Dollars
Papavar somniferum	Opium	2,132	35,000,000
Mentha virdis	Menthol	200	1,600,000
Cinchona officinalis	Quinine	50	760,000
Cassia angustifolia	Senna	3,800	600,000
Dioscorea deltoidea	Diosgenin	20	400,000
Rauvolfia serpentina	Reserpine	3	60,000
Atropa acumminata	Belladona	28	8,000
Pyrethrum Spp.	Pyrethrin	16	6,000
Plantago ovate	Psyllium	29,910	12,000,000

Source: *Role of Medicinal Plants in Healthcare in India: James A. Duke; Brisbane, Australia (1996).*

Other uses

1. Cosmetic uses – Since ancient time ethnic people has been using different plant parts in form of paste, Powder, body message, hair oil, lotion etc. for curing all kind of hair and skin problems. Some of the most common plants used in this regards are *Ocimum sanctum*, *Curcuma longa*, *Vitex negundo*, *Cicer arietinum*, *Sesamum indicum*, *Santalum album*, *Rosa damascene*, *Sapindus mukorossi* etc.

2. Plant Dyes – Indigenous people extracted different colour dyes from various parts of certain plants. For example, dyes are obtained from the flower of *Butea monosperma* and *Caesalpinia sappana*, leaves of *Tectona grandes*, *Caesalpinia coriaria*, bark and leaves of *Terminalia catappa* and *Indigo feratictoria* etc.

3. Fabric Painting – The 'Chhipa' community of Rajasthan prepare block painting from very ancient time. Colour and wooden blocks are prepared from different parts of specific plant. Some of the plant species involved in this process are *Azadirachta indica*, *Coriandrum sativum*, *Aegle marmelos*, *Ficus religiosa*, *Mangifera india*, *Elaeocarpus sphaericus* etc.

Apart from the above mentioned notable ethnobotanical usesof various plants, traditional uses of many other plants such as soil conservation, insect repellent, fodder, cooking medium, brushing of teeth, pesticides, perfume etc. are also recorded.

Table - 3. Use of wild plants by the tribal of India

Use of wild plant species	Number of Species of used
1. As food plants (cereals, pulses, vegetables, fruits etc.)	3900
2. As medicinal herbs	7,500
3. As fodder plants	400
4. As fibre and cordage	525
5. As pesticides and piscicides etc.	300
6. As gums, reins and dyes	300
7. As incense and perfumes	100
8. Miscellaneous and for other cultural requirement	700

Source: *Ethnobiology, Government of India, 1994.*

Conclusion

Very from the beginning of the ancient time, man has been using different plants according to their needs e.g. as food, ethnic medicine, dye, fabric painting, fodder, natural pesticides, gum etc. Most of the uses of plants by ethnic societies have not come in the lime light of civilized people. This traditional knowledge of uses of different plant species has been transmitted from one generation to the next offspring verbally. Therefore, it is urgently needed to document this knowledge from the particular local people before the knowledge will disappear. Hence, it is utmost important to conserve those valuable plants as well as the traditional rare knowledge and expand the periphery of ethnobotany to live health and wealthy.

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Plate-1. Photographs of few important ethno medicinal plants (*source: Internet under CC-BY-SA license*)

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A REPORT ON LIFESTYLE FOR ENVIRONMENT (LIFE)

LiFE, means 'Lifestyle For Environment' and was introduced by Prime Minister Narendra Modi—at COP26 in Glasgow on 1 November 2021—as a mass movement for "mindful and deliberate utilization, instead of mindless and destructive consumption" to protect and preserve the environment. This can become a mass movement towards an environmentally conscious lifestyle. Life is a Public Movement to Mobilize Individuals To Become 'Pro-Planet People' If you want to change the world, start with yourself. Responsible individual climate action is the key to safeguarding our collective future. The LiFE movement seeks to transform persons into 'pro-planet people', who would adopt sustainable lifestyles. Behavioral change of individual people & Make it a mass movement can save our Environment from severe pollution. It will also help in achieving Sustainable Development Goal of a Country.

DESKU EIACP Resource Partner on Environmental Biotechnology was started LiFE programmes on seven action points (Energy Saved, Water Saved, Single Use Plastic Reduced, Sustainable Food Systems Adopted, Waste Reduced, Healthy Lifestyles Adopted and E-Waste reduced) as school/village awareness programmes, seminars, special day celebrations, drawing competitions etc from January, 2023.

1. Awareness campaign on Pollution Control under LiFE Programme

An "**Awareness campaign on Pollution Control under LIFE Programme"** was organized on 10th January, 2023 by DESKU EIACP PC Resource Partner on Environmental Biotechnology, University of Kalyani, Nadia, West Bengal, in collaboration with IQAC, Saldiha College Bankura, and West Bengal. In this programme Self Help Grpoups (SHGs) and college students of Saldiha College were participated.

The Inaugural session was started from 12.00 noon onwards. The programme was inaugurated by the principal, Dr. Shaikh Sirajuddin, Saldiha college and other distinguished dignitaries. Prof. Kausik Mondal, Coordinator DESKU EIACP RP, Dr. Dipak Kumar Rana, IQAC Coordinator, Saldiha College, Dr. Misha Roy, Vidyasagar University, West Bengal and Dr. Chandan Kumar Pati, Assistant Professor and Head, Department of Botany, Saldiha College.

Photo: Awareness campaign on Pollution Control under LIFE Programme at Saldiha College Bankura, West Bengal on 10th January, 2023

The welcome address was given by Prof. Kausik Mondal, Coordinator, DESKU EIACP RP. The theme of the programme was delivered by Dr. Anusaya Mallick, programme officer, DESKU EIACP.

Photo: Awareness campaign on Pollution Control under LIFE Programme at Saldiha College Bankura, West Bengal on 10th January, 2023

Then the Technical session was conducted by Dr. Misha Roy, Vidyasagar University, West Bengal and Dr. Chandan Kumar Pati, Assistant Professor and Head, Department of Botany, Saldiha College. They described about the single use plastic and water

conservation. More than 200 participants (students, teachers, college staffs and SHG members) were participated the awareness programme.

Photo: A group photographs of the Awareness campaign on Pollution Control under LiFE Programme at Saldiha College Bankura, and West Bengal on 10th January, 2023

At the end of the programme Mr Tanmoy Acharjee, IT Officer DESKU EIACP RP gave the vote of thanks. He gave the specially thanks to principal, Dr. Shaikh Sirajuddin, Saldiha college, Dr. Dipak Kumar Rana, IQAC Coordinator , Prof. Kausik Mondal, EIACP Coordinator, Resporce persons, EIACP staffs, students, college staffs, SHG members and MoEF & CC for their support

2. National seminar on E-Waste management

DESKU Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP), Programme Centre –Resource Partner (PC-RP) on Environmental Biotechnology, University of Kalyani, West Bengal, Supported by MoEF & CC, Govt. of India has taken initiation to mass awareness on Mission LiFE among the school, college, university students and faculties through E-waste Management awareness programme through a rally and seminar on 17th February, 2023 in collaboration with Sub-committee, E-Waste Management Cell, University of Kalyani. A brochure for the seminar was widely circulated through the website of University of Kalyani, facebook page, Whatsapp group and other social media.

An awareness rally was started at 10.45 A.M in the University campus. The Hon'ble Vice Chancellor Prof. (Dr.) Manas Kumar Sanyal inaugurated the rally. More than 200 participants from different school, colleges, universities, faculties, officers, staff and research scholars were participated in this programme.

More than 200 **participants** were registered in the programme. There are 92 nos of participants registred through google form and other participants (school students and university students, faculties, research scholars) did registration through offline mode. Mr. Anindya Banerji, SPOC, E-Waste, Webel (WBEIDC) gave a special talk on E-Waste management. This seminar is very much relevant to the present situation of the society.

Photo: Inauguration of Mini Rally on E-waste by the Hon'ble Vice Chancellor Prof. (Dr.) Manas Kumar Sanyal on 17th February, 2023

Photo: Mini Rally being held on E-waste at KU on 17th February, 2023

3.Village Awareness programme on Life style for Environment (LiFE)

➢ Awareness programme at Bhangarapara lane, Ranaghat, West Bengal

DESKU EIACP PC RP on Environmental Biotechnology was conducted an Awareness programme on Lifestyle for Environment (LiFE) of seven action points (Energy Saved, Water Saved, Single Use Plastic Reduced, Sustainable Food Systems Adopted, Waste Reduced, Healthy Lifestyles Adopted and E-Waste reduced) at Bhangarapara lane, Ranaghat, West Bengal on 20th February, 2023.A total of 15 women participants were actively participated in the programme.

Photo: Village Awareness programme on Life style for Environment (LiFE) by EIACP staff at Bhangarapara lane, Ranaghat, West Bengal on 20th February, 2023

Photo: Village Awareness programme on Life style for Environment (LiFE) by EIACP staff at Bhangarapara lane, Ranaghat, West Bengal on 20th February, 2023

➢ Awareness programme at Uttar Rajapur, Nadia, West Bengal

On the occasion of National Science Day, an Awareness programme on Lifestyle for Environment (LiFE) of seven action points was conducted at Uttar Rajapur, Nadia, West Bengal on 28th February, 2023.

The DESKU EIACP staffs were participated in the programme. Mr. Tanmoy Acharjee, IT Officer gave the welcome address. Dr. Anusaya Mallick, Programme officer gave an interactive talk on Lifestyle for Environment of seven action points. Mr. Sourov Banerjee, Information officer coordinate the interactive section. More than 50 participants of different categories (women, children, farmers and teachers) were participated in this programme.

Photo: Village Awareness programme on Life style for Environment (LiFE) by EIACP staff

Photo: A group photographs of Village Awareness programme on Life style for Environment (LiFE) at Uttar Rajapur, Nadia, West Bengal on 28th February, 2023

FORTHCOMING EVENTS		
Event	**Date**	**Place & Correspondence**
International Conference on Environment, Agriculture and Biotechnology (ICEABT)	15th October, 2023	Chennai, Tamil Nadu, India http://academicsconference.com/Conference/34391/ICEABT/
International Virtual Conference on Environmental Science & Green Energy (IVCESGE)	2nd June, 2023	Islamabad, Pakistanhttp://conferenceonline.net/Conference/961/IVCESGE/
International Conference on Biological, Agricultural & Environmental Science (ICBAES)	2nd June, 2023	Bhawanipatna,Odisha, Indiahttp://isete.org/Conference/19747/ICBAES/
International Conference on Environment and Life Science (ICELS)	3rd June, 2023	Saitama, Japanhttp://sciencefora.org/Conference/23900/ICELS/
International Conference on Nanotechnology, Renewable Materials Engineering & Environmental Engineering (ICNRMEEE)	4th June, 2023	Kolkata, West Bengal, Indiahttp://ieeeconference.com/Conference/13847/ICNRMEEE/

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BOOK POST

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