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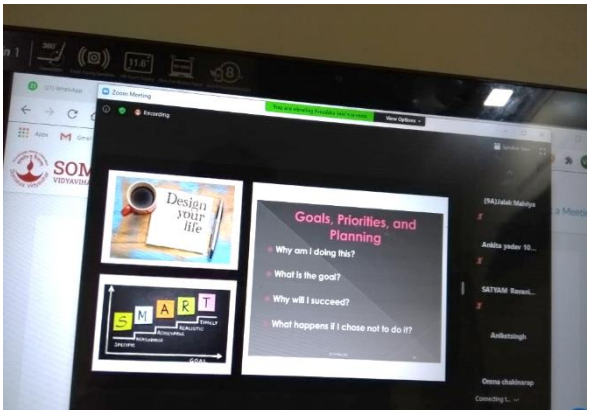
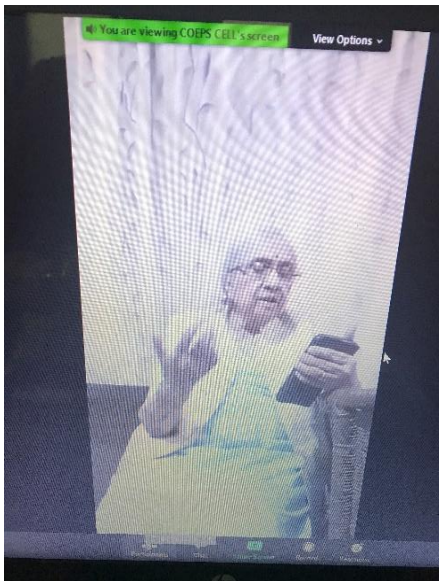
A slide presented at World Environment Day webinar organised by IWSA HQ on 5th June 2020. Pictures taken by Ms. Tripta Tewari, IWSA member during the lockdown period.



A slide presented by Ms. Sandhya Deshpande during the webinar on "How to use time wisely" for the Science Nurture Students of IWSA on 28th July, 2020.

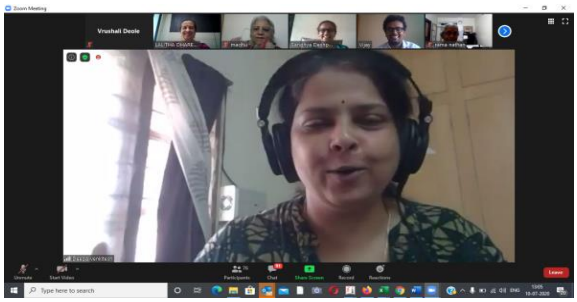
A slide presented by Dr. G.P. Kothiyal during his online talk on "Story of Evolution of Glass/Glass-Ceramics: Useful materials for Every Walk of Life" under the "Science and Our Life" series of talks of the Science Awareness Programme of IWSA, on 17th August, 2020.



Ms. Urmila Rau Lal, Pune (Scientist, historian and writer) speaking at the Independence Day Celebration of IWSA on 15th August, 2020

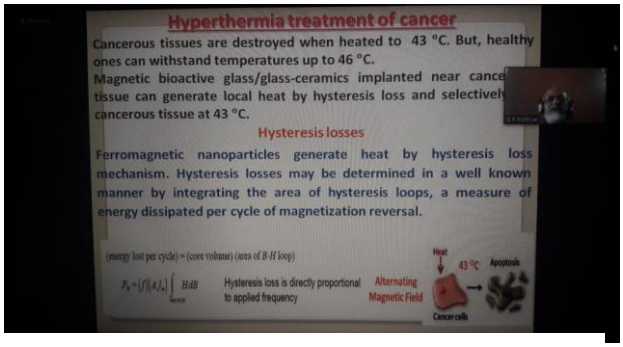
BRANCHES

Roorkee 1979, Hyderabad 1979, Pune 1980, Nagpur 1982, Kolhapur 1982, Delhi 1987, Kalpakkam 1987, Baroda 1988, Amravati 2010, Bengaluru 2018, Nellore 2018



BRNS sponsored Webinar on "*Introduction to Optical Coherent Communication*" by Dr. Deepa Venkitesh hosted by K.J. Somaiya Institute of Engineering and Information Technology on 10th July, 2020

BRNS sponsored Webinar on " Inside *NMR Spectroscopy*" by Dr. Suvarn Kulkarni hosted by SIES College of Arts, Science & Commerce, (Autonomous), Sion West, Mumbai on 5th August, 2020



One of the interesting slides displayed by Dr. G.P. Kothiyal in his BRNS sponsored Webinar on " Glass in every walk of life; A Versatile Functional and Structural Material" hosted by NES Ratnam College of Arts, Science and Commerce, Bhandup on 24th August, 2020

Day Care Children Aarisha Godbole, Prananshi Pragya , Vasundhara Patil, Pari Kulkarni and Akshara Jankoli got awards in the online Drawing Competition organised by Balmanch,UJJAIN

IWSA Member Dr. Jyotsna Singh received the INDIA STAR INDEPENDENT AWARD 2020 on 74th Independence Day for her appreciable work in the field of Psychology

From the Editor's Desk

Dear IWSA Members,

In this issue of Newsletter, you will find certain new activities in addition to our regular features of reports regarding Popular Science Lectures, activities of the Science Awareness committee, Early Childhood Education and from various Branches etc. All the activities reported in this Newsletter have been conducted online due to COVID Pandemic. IWSA has conducted three BRNS Popular Science Lectures during July and August 2020 in various colleges of Mumbai. IWSA initiated "Science and our Life" Lecture Series from 20th July, 2020. This is our new endeavour, among the various other Science Education Programs which we have initiated earlier, to take Science to the society. In this Newsletter we bring to you the reports on two such lectures that took place through Google Meet platform on 20th July, 2020 and 17th August, 2020. Another new activity was a series of lectures organised by IWSA's Learning Garden Members through Google Meet platform which was named as as "Member Enrichment Program". Brief reports of the lectures are given in this Newsletter. Most of these lectures can be viewed in IWSA's newly launched You Tube Channel. COVID 19 lockdown did not dampen the spirit of IWSA. Several online meetings were held among the members to carry on some of the activities like classes for ECCE teachers and Nursery children. IWSA in association with Drishti, started ADHD & LD course and shadow Teacher course online from 15th June, 2020. This issue also brings the interesting online activities held at IWSA Branches at Amravati, Baroda, Bengaluru, Delhi, Hyderabad, Kolhapur and Nagpur. Dr. Sheela Donde, INSA Teacher Awardee and IWSA member has written a detailed article about online education and she has also shared her experiences of teaching in some rural schools. Another short article by a young IWSA Member describes the effect of lockdown on environment and emphasizes the need of a systematic and planned approach towards sustainable development. We have reported about some of the women achievers like Bibha Chowdhuri, who could not get the Nobel Prize , but earned a permanent place in the sky, as International Astronomical Union named a star after her. In this issue, we pay our homage to Dr Aban Samuel, former Director of Medical Group, BARC and a very distinguished IWSA Member who passed away on 2nd May, 2020. I hope that all of you will enjoy reading about these reports and the scientific information content of this Newsletter.

With best wishes
Shyamala Bharadwaj
shyamala.bharadwaj@gmail.com

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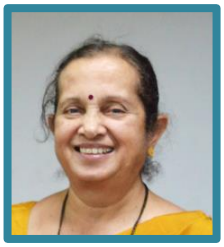
President's Message



Dear IWSA Members,

We are five months into the pandemic. However, COVID -19 has not dampened the spirit of IWSA members. We have all embraced the NEW NORMAL with resilience. The activities of IWSA have not reduced but on the other hand increased many more times. What we could not achieve in the pre-COVID time, we have achieved now through digital technology and on-line lectures and webinars. Our tryst with on-line webinars started with our Annual General Body meeting and the Central Council meeting on the 27th June with a record attendance of 84 IWSA members at the AGBM and 30 at the CC, from all over India.

We observe that IWSA members from Headquarters and the branches have been able to come together and create a closer bond due to these several on-line lectures. IWSA has started two on-line lecture series-

1. The monthly- "Science and Our Life" series of lectures. The main objective of these lectures is to take science to society. Our lives are intertwined with thousands and millions of scientific principles, some of which we understand and we are in awe of several others. Through these lectures, we are trying to understand the basic day to day phenomena which affect our lives. Topics from several disciplines, related to Health, Education, Science & technology, Food, History etc are being covered by experts in these lectures. In the period May to August, two talks have taken place and many more are planned.

2. The second lecture series is under the "Member Enrichment Program". These are weekly online talks by IWSA members from all over the country, scheduled on Wednesday afternoons on topics related to nature, environment, ethnobotany, biology, agro-homeopathy, horticulture therapy etc. The objective of these talks is for members to share and enrich the members with the knowledge gained and enhance their own capability of scientific presentations on a topic of their choice. Members from Mumbai and branches have been taking part in these lectures on varied subjects. There were 9 talks in the period of this issue of the News Letter and they have all been covered here.

3. The BRNS series of lectures have also taken place on-line and there have been 3 lectures at various colleges.

Online Certificate courses on ADHD & LD and Shadow Teachers for ECCE teachers, in association with Drishti, started on 15th June, 2020. This course is completely aligned with NEP 2020, wherein, complete inclusivity has been given great importance.

We, the members of IWSA have gained expertise in conducting such on-line lectures which help us in achieving much higher outreach.

A memorable experience was that of the celebration of Independence day, virtually. We could thus invite one of the senior veterans involved in the independence movement who could share with us her memorable events during that era.

Even with these intense activities, we cannot but feel sad that all our on-site activities have come to a halt. The Hostel is running at one third its capacity as most of the inmates returned home as soon as the lock down was announced. The Day Care Centre, Nursery school, Science Nurture program, Library, Health Centre and the Computer centre have all closed down in the pandemic. However, the flag of IWSA is kept high by the incessant work and commitment by all the committee members, Hostel supervisors, Administration staff and other staff.

We are all confident that, IWSA will find new ways and means to achieve its mandates adopting the New Normal and taking it into its stride.

With best wishes,,
Lalitha Dhareshwar
lj_dhareshwar@yahoo.com

Reports from Head Quarters

Science Awareness Programs

A. IWSA – BRNS Popular Science Lectures

1. Online BRNS Popular Science Lecture at the K.J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai on 10th July, 2020

Indian Women Scientists' Association, (IWSA) in association with the COEPS CELL (Career Opportunity for Engineering Students in Public Sector) of K.J. Somaiya Institute of Engineering and Information Technology, organized a webinar on "*Introduction to Optical Coherent Communication*" on 10th July 2020 at 11.00 am. This webinar was supported by Board of Research in Nuclear Sciences DAE (BRNS). Dr. Deepa Venkitesh. Professor, Department of Electrical Engineering IIT, Madras, an expert in the field of Optical Communication, was the speaker in this webinar. Dr. Lalitha Dhareshwar, President, IWSA, provided a brief overview of the scope of IWSA—the woman-driven scientific community, welfare schemes, scholarships etc in addition to reading the profile of the expert speaker. The Webinar was aimed to raise awareness on the fundamental working principles of optical fiber communication, spectral efficiency etc. Dr. Deepa Venkitesh focused on the different digital modulation schemes used in optical communication to improve spectral efficiency. She explained the basic working principles of optical coherent communication with advanced modulation formats. Some of the important concepts related to addressing the ever increasing demand of the bandwidth such as exponential trend in the demand and data rates, tenets of optical networks, digital modulation for optical communication, modules, spectral efficiency, strategies to pack more bits in a given time slot and multiplexing schemes in optical communication were elaborated.

To reinforce the exposition, Dr. Deepa, posed problems and discussion details with the participants towards the end of each module. Prof. Sandhya Deshpande of KJSIEIT was the Convener of the event that witnessed a registration of 192 participants with 132 attendees for the live webinar. Alumnus Mr. Vijay Mane and Mr. K. Chaitanya anchored the event successfully.

2. Online BRNS Popular Science Lecture at SIES College of Arts, Science and Commerce, Sion, Mumbai on 5th August, 2020.

A webinar on "Inside NMR spectroscopy" was organised by Indian Women Scientists Association supported by BRNS-DAE and hosted by SIES College of Arts, Science and Commerce, Sion, Mumbai on Wednesday, 5th August 2020 at 3 p.m. via MS- Teams platform. The resource person was Prof. Suvarn Kulkarni, Department of Chemistry, Indian Institute of Technology, Bombay. NMR is a powerful tool to decipher the structure of organic compounds and this technique also enables one to understand the electronic environment in the molecule. In his lecture, Prof. Kulkarni discussed the origin of NMR spectroscopy and explained in detail about using this tool for solving the structure of molecules. He posed the following questions and systematically developed the subject to answer these questions: Why it is called as Nuclear Magnetic Resonance? How NMR spectra is generated? What is the role of deuterated solvents and internal standards? What is shimming and locking? Why different protons appear at different places? Why they show different multiplicity? And finally how do we put together all the information to come up with a structure of a molecule? After discussing the basics of NMR spectroscopy, he described various types of NMR spectrometers that are presently available for the researchers from a table top 45 MHz spectrometer to 1000 MHz complex NMR Machine. While discussing the applications of NMR spectroscopy for structure determination of complex molecules, he posed some problems to the students and gave them time to solve the structures. It was heartening to see in the chat box the students' involvement in applying NMR spectroscopy to structure determination and explaining the observed intensities and splitting patterns of the spectra. Prof. Kulkarni concluded his lecture by referring to applications of NMR spectroscopy in the medical field using the MRI scan. Participants posted their questions and comments in the chat box. After the lecture ended, there was a lively interactive question and answer session. Prof. Kulkarni patiently answered all the questions and the participants were satisfied with his explanations. The participants filled the feedback form and were awarded an e-certificate. Almost all the participants have stated they would like to attend such webinars in future.

The Webinar was open for Professors, teachers, research scholars, post graduate students and degree college students. A total of 351 participants registered from 45 different institutes and about 150 participants were present at the live session. Participants from BARC, University of Florida, Institute of Science Mumbai and Nagpur, University of Mumbai, Institute of Forensic Science, Mumbai, Homi Bhabha Centre for Science Education TIFR Mumbai, Union Christian College, Cochin, St. Xavier's College Ahmedabad, Sathaye College, Vile Parle, B. K. Birla College (Autonomous) Kalyan and SIES college, Sion, Mumbai, actively participated in the webinar.

The webinar began with welcome address and session details by Mrs. Gayatri Sehgal - Head of Department of Chemistry, SIES College. Dr. Uma Shankar - Principal SIES College, addressed the participants and encouraged them to actively participate in such Popular Science Lectures which will help them to gain knowledge about the latest developments in science. Dr. Shyamala Bharadwaj,- member of Executive committee, IWSA and Editor of IWSA Newsletter talked about the various activities of IWSA and emphasized on the activities taken up by IWSA to promote and popularise science among the college students. Dr. George K. Abraham- Senior Associate Professor of the Department of Chemistry, SIES College introduced the resource person, - Prof. Suvarn Kulkarni , Department of Chemistry , IITB and the session topic. The webinar ended with vote of thanks by Mr. Shekhar Aiyar, Senior Associate professor, Department of Chemistry, SIES College.

You Tube Video Link for this lecture: https://youtu.be/G6SgjW7UYT4

3. **Online BRNS Popular Science Lecture at the NES Ratnam College of Arts, Science and Commerce, Bhandup, Mumbai on 24th August, 2020**

A Webinar on "Glass in Every Walk of Life: A Versatile Functional and Structural Material" was hosted by Departments of Physics and Chemistry of NES Ratnam College of Arts, Science and Commerce, Bhandup on 24th August, 2020 through Zoom platform. It was organized by Indian Women Scientists' Association and supported by BRNS-DAE.

The resource person was Dr G P Kothiyal, Former Head, Glass and Ceramics Division of BARC. Dr. Kothiyal delivered an interesting lecture by giving an overview of the composition, preparation, and uses of different types of glasses. Dr. Kothiyal described about the synthesis of glass ceramics and their various applications. New areas of research and application of glass as a functional material such as- Nd: doped glass as a laser material, Bio-compatible glasses were impressive and informative. The presentation was followed by interactive question and answer session which enhanced the knowledge of the participants. The participants filled the feedback form and were awarded an e-certificate. 98.2% of the participants have stated they would like to attend such webinars in future.

Over 107 participants were represented from different parts of the country. They comprised of faculty (30%), research Scholars (3%), undergraduate and Post graduate students (67%) and five members of IWSA.

A formal welcome by Vice Principal Dr Vinita Dhulia was followed by a short presentation about the objectives and activities of IWSA by Dr Lalitha Dhareshwar**,** President, IWSA. The session concluded with a vote of thanks.

B. Celebration of World Environment Day on 5th June, 2020

IWSA had organised a webinar on 5th June, 2020 to celebrate World Environment Day. Google Meet platform was used for this celebration. Dr. Lalitha Dhareshwar, President, IWSA welcomed everyone into the chat room of MEET. She gave a brief overview about

IWSA, its branches and flagged off the first virtual webinar celebrating World Environment Day 2020, by IWSA.

Ms. Madhu Pahwa spoke about the genesis of World Environment Day and introduced this year's theme - BIODIVERSITY. She emphasized on how fragile yet significant biodiversity is in relation to the present times of Corona virus pandemic that has affected all nations of the world. Glimpses of the learning garden at IWSA headquarters (HQ) Vashi, were shown. Further she spoke on the purpose and importance of such an activity introduced by the Science Nurture subcommittee of IWSA..

Rita Mukhopadhyaya, Vice President, IWSA, who designed and anchored this event spoke next. She welcomed all speakers and appreciated everyone's participation in this new virtual platform. Speakers were requested to present 2-3 slides highlighting the biodiversity of their area. Members from all 11 branches were present in the webinar. There were 2 invited speakers – Dr. Gita Datta (IIT Madras) and Dr. Shyama Pal (Mumbai).

The first presenter was Ms. Sushma Lehri from HQ. She showed the biodiversity at IWSA. Dr. Deepalaxmi Kulkarni, Convenor, Amaravati branch, presented the biodiversity from that region of Maharashtra. Bangalore branch had 2 speakers;Ms. Rashmi Shenoy presented the flora and fauna of the great Eastern Ghats that border the states of Tamil Nadu and Karnataka, and Ms. Rhea a student pursuing her masters degree presented the platter of marine resources along the coastline of Goa.

Skilled in bird photography, our guest speaker Dr. Gita showed beautiful shots of rare birds accompanied by her lucid narrations.

Dr. Sandhya Kiran, Convenor of Baroda branch, spoke about the richness of biodiversity of the sacred river Narmada that flows through 3 states of the country. She also spoke on the trees of Baroda and her significant observations on diminishing forest cover mapped with help of global positioning satellite technology. Senior members and Convenor of Nagpur branch Dr. Pradnya Bhalerao, presented their compilation of biodiversity from the central part of India. This was followed by the slides sent from Nellore branch depicting the area from the east coast.

Slides showing the significant coastline and shore biodiversity around Kalpakkam were sent by Dr. Padma, Convenor of Kalpakkam Branch and her team members.

Hyderabad branch Convenor, Ratna Kollur presented the biodiversity of Telangana. One more presentation that brought out the importance of river and biodiversity on the path of its flow was by senior and former member of Board of Trustee, IWSA, Dr. Susan Eapen by giving the example of Periyar river.

The presentation by Ms. Anjali Bhagwat, member HQ, another ace in macro photography opened up the world of invertebrate species found in the Western ghats, Maharashtra. Significance of such creatures in maintaining ecological balance in sustainable habitats was palpable. The final presenter was our guest speaker Dr. Shyam Pal who pursues knowledge based wildlife tourism. The fragile ecology of the Sunderbans, unique species

of mangrove, the salt water adapted by the Bengal tiger, gharials etc. created long lasting impressions in the minds of the participants.

Vote of thanks was presented by Ms. Vijaya Tilak. More than 55 participants attended this webinar.

C. "Science and Our Life" Series of Webinars

IWSA initiated "Science and our Life" Lecture Series from 20th July, 2020. This is our new endeavour, among the various other Science Education Programs which we have initiated earlier, to take Science to the Society. Our lives are intertwined with thousands and millions of scientific principles and we always try to understand the basic day to day phenomena which affect our lives. In this lecture series, speakers from all disciplines of science will be talking about some of the most difficult scientific principles in a simple manner. In this Newsletter we bring to you the reports on two such lectures that took place through Google Meet platform on 20th July, 2020 and 17th August, 2020.

1. Healthy Bladder and Bowel Habits by Dr. Nigamaja Hariharan on 20th July, 2020

The first lecture of the series on "Science and Our Life" was held on 20th of July, 2020 at 3 pm as an ON-LINE webinar, through Google Meet platform. Dr. Nigamaja Hariharan, Physiotherapist, CCCE, CLE Graduated from MGR Medical University, Chennai and a Gold Medallist in Bachelor of Physiotherapy, spoke on "Healthy Bladder and Bowel Habits". Dr. Nigamja in her talk, meticulously emphasised the need of healthy habits vis-à-vis bladder and bowel movements. This topic is extremely relevant to the lives of all human beings, yet, a very much neglected issue. Most people, especially women, shy away from asking their queries regarding this topic. Dr. Nigamaja removed many of the myths from the minds of the 56 participants attending the google-meet. She spoke about how to tackle uncomfortable issues related to bladder and bowels, with simple exercises and a wholesome, healthy diet. She emphasised that we ought to treat the bladder as a two-year old child and the bowel as an important guest! The audience slowly mustered courage to ask the doctor about many problems that they faced. Dr. Nigamaja very patiently answered all the questions.

Before Dr. Nigamaja's lecture, the members were welcomed by IWSA's President, Dr. Lalitha Dhareshwar. She gave a brief introduction to IWSA and its objectives. Dr. Devaki Ramanathan, Convenor of the Science Awareness committee, explained the objective behind the series (Science and Our Life) of lectures. Ms. Tripta Tewari, Co-convenor, Science Awareness committee, introduced the speaker.

2. Story of Evolution of Glass/Glass-Ceramics: Useful materials for Every Walk of Life by Dr. G.P. Kothiyal on 17th August, 2020

Dr. Govind Prasad Kothiyal, former Head, Glass and Advanced Ceramics Division of BARC, gave a lecture on "Story of Evolution of Glass/Glass-Ceramics: Useful materials for Every Walk of Life" under the "Science and Our Life" series of talks of the Science Awareness Programme of IWSA, on 17th August, 2020. The online lecture was attended by 34 participants comprising of IWSA members from HQ, branches, college students and faculty as well as school students. He made the audience realize that glass can be seen in every walk of life and then went on to give its meaning, elaborated on its structural arrangement, physical and chemical properties. Glass ceramics were designed to overcome the brittle and mechanically weak nature of glass. The properties of glass ceramics and how they could be modified using additives, their processing and post preparation treatments were explained in detail. History of glass and glass-ceramics was also traced globally. Recent uses of glass in architecture as a structural material, Energy Production, Safety Gadgets and in the field of Medicine were enumerated with examples. Thus, Optical Fibers, Laser Glass, Float Glass Panels, Fire Safety Glass, Insulating Glass, Stained Glass, Anti-reflective glass, Self-Cleaning Glass, Heliostats, Bullet Resistant Glass, Laminates and Biomaterials were described in brief with examples that the audience could correlate to. Many of the materials developed at the Glass and Advanced Ceramics division of BARC were also shown.

D. Lecture for Science Nurture Students

Webinar on "Use your time wisely" on 28th July, 2020 organized by IWSA in association with COEPS Cell, KJSIEIT

The **Career Opportunities for Engineers in Public Sector (COEPS Cell) of KJSIEIT, Sion** under the guidance of Prof. Sandhya Deshpande, Convener, COEPS Cell, hosted a webinar on the topic **"How to use time wisely"** for the students. The webinar was organized by the Indian Women Scientists' Association (IWSA) and the speaker of webinar was Mrs. Sandhya Deshpande. The session was scheduled at 3:00 pm and the respective students were asked to join the webinar. The session began with a heartwarming introduction by Dr. Lalitha Dhareshwar to the speaker, welcomed all the school students and their respective teachers .

The speaker, Prof. Sandhya Deshpande, began the webinar by explaining the significance of the word Time. The vacillations for our decisions or choices is where the time stands for itself. The webinar conducted by the speaker managed to explain the purpose of time along with its implications in real life. The triangle of success was used to conceptualize the skills, attitude, and the subject knowledge simultaneously. This webinar set one's sights on how to succeed in life considering time as the most significant element. This was magnificently explained taking into thought the great famous leaders like Swami Vivekananda and Sundar Pichai. The speaker brought across information, data, and knowledge on a linear track. It focused on the idea of efficiency in utilizing the time.

The webinar was attended by 93 participants. They thanked the speaker and IWSA for organizing this webinar and requested for more such webinars.

E. IWSA's Learning Garden

IWSA's Learning Garden Members organised a series of lectures on every Wednesday starting from 1st July, 2020. They have named it as "Member Enrichment Program". A brief report of the lectures under this program is given below. All webinars were conducted through Google Meet platform. Most of these lectures can be viewed in "Indian Women Scientists' Association You Tube Channel"

1. On **1st July, 2020**, **Ms. Madhu Pahwa**, Jt Secretary, Executive Committee, IWSA spoke on "Forest to Farms". It is a topic of ethanobotany. This webinar was attended by 27 participants. She spoke on how fruits were chosen as a food for early humans in the forest. Through natural selection, sweet fruits were selected and as man became aware of domestication, he started cultivating them. The history and process of domestication was covered. Ms Pahwa explained how man improved the variety of seven different fruits from indigenous to cultivated forms by domesticating them and converting them from seeded to seedless fruits. She emphasized the importance of wild fruits and recommended the encouragement of farmer to grow organic fruits..

2. On **8th July, 2020, Dr. Sushma Lehri**, member, IWSA spoke on Landscapes of Scotland and Ireland. The webinar was attended by 44 participants. A thing of beauty is a joy forever and the natural beauty of Scotland and Ireland were displayed by Dr. Sushma Lehri through the photographs taken by her. Scotland is famous for its natural beauty: towering mountains, deep blue Lochs, lush green grasslands, dense forests, moors, pinnacles on Isle of Skye Island and mesmerising sea views.

   Scotland consists of more than 800 islands. Medicinal values of the beautiful purple wild flower Heather and usage of oak tree and other plants/ trees which are found in abundance in Scotland were discussed. Breath taking views of seascapes, Lochs rivers and castles were also **displayed by her in her presentation.**

3. **On 15th** July, 2020, Ms. Vijaya Chakravarty, Coordinator of the Learning Garden sub committee and the team leader of the member encrichment program, spoke on "Wildlife Gardening: Invitation to Butterflies".

   Wildlife---flowers, butterflies, bees, birds etc are slowly but surely getting extinct across the globe due to anthropogenic activities. Traditional conservative practices like Sacred Groves helped preserve the native flora and fauna. However, these landscapes are vanishing by the second. The objective of the presentation was to spread awareness of the disappearance of the indigenous flora and fauna, focussing on butterflies and the plants required to sustain them. Butterflies survive on nectar as they have no mouth parts to eat, whereas caterpillars are voracious feeders. They survive on foliage. The butterflies undergo a complete metamorphosis. Being at the bottom of the food chain, every stage in the butterfly's life is hazardous. Only one egg out of 100 laid turn into butterflies. List of butterfly nectar plants and caterpillar food plants was provided and tips to attract butterflies into the garden were given. As butterflies are cold blooded, the provision of rocks on which they can bask, over ripe fruit for the juices and a dish of wet mud for the minerals are required for helping the butterflies to reproduce and should be added to the butterfly garden. Butterflies act as environmental barometers and are studied by scientists across the world to study climate change. Even the slightest change in the climate has a detrimental effect on

the butterflies. Migration pattern of a few Indian butterflies was also examined. About 98 participants attended the webinar.

4. On **22nd July, 2020, Ms. Kalpana Sathe**, member, IWSA presented a talk on "Birding: A Fulfilling Experience" under the "Member Enrichment Program" by Learning Garden, IWSA.

   The session started with introductory remarks and introduction of the speaker by Mrs. Tripta Tiwari. At the beginning Ms. Sathe informed how she was introduced to birding and what birding meant to her. She then outlined the birding locations visited and highlighted the diversity of habitats. She shared her experience of birding done in the first quarter of 2020. The speaker then went on to explain the broad areas, usually undertaken to study birds and highlighted the areas of focus, namely, the geography, habitats, diet and behaviour of the birds. She presented the photographs of birds taken by her. She then started with the experience at the wetlands of Mangalajodi in Odisha. These wetlands at the banks of the Brackish lagoon of Chilika attracts many migratory birds during the winter. She explained in detail about the Painted Stork, the Black Headed Ibis, the Asian Open-bill, the Northern Pintail etc. Followed by this, the next destination was the tropical deciduous forests of Dandeli, Karnataka. The highlight of this place was the Malabar Pied hornbill and its unique behaviour. This was followed by a description of the many colourful birds in Sikkim, the Verditer Flycatcher, the Green Magpie, the Grey Bushchat and their diverse habitats. Finally, she presented the unique and unexpected diversity of birds within the urban surrounding of Vashi, Navi- Mumbai which was discovered by the speaker through her camera during the lockdown period. Towards the end, the speaker highlighted a few peculiar facts about birds like their digestive system and evolutionary reason for attractiveness of males. Mrs. Vijaya Chakravarty gave the closing remarks and opened the session for Q & A. Ms. Madhu Pahwa and Mrs. Snehlata Bhavsar narrated their impression about the program through creative lines of poetry in Hindi and Marathi respectively. The audience asked several questions, which were answered by the speaker along with several members sharing their experiences and insights to add value to the session. About 52 participants attended the webinar.

5. The fifth MEP talk on ''Recent Trends in Mushroom Home Cultivation'' was presented by **Dr Paramjit D. Anthappan**, IWSA member on **29th July 2020**. Dr. Paramjit Anthappan discussed about the twelve principles of permaculture relevant to the sustenance and progression of the Learning Garden ecosystem and IWSA green initiatives in accordance with its vision and mission. Further the materials, methods, prospects and challenges associated with the most popularly homegrown oyster mushroom was presented in detail with comprehensive illustrations, photographs and flow charts. This was followed by an insight into the cost effective, recent trends and innovations introduced at national and global fronts that could be easily adopted by interested growers at domestic level. Useful resources for the same were shared to facilitate follow up.. The session was compered by Ms. Vijaya Chakravarty and technical support was rendered by Dr. Suparna Kamat and Ms. Sukvinder Sandhu. Ms. Madhu Pawha introduced the speaker at the initiation and presented her a lyrical

Hindi couplet at the end. The concluding remarks were given by Dr Sangeeta. In this session, the first online quiz was introduced, besides recipe and photography contests on mushrooms.

This session had an audience outreach of 44 participants who logged on from HQ and other IWSA branches. Ms.. Vijaya Chakravarty announced two contests for the participants: (i) photographs of mushrooms and (ii) recipies based on mushrooms.

6. On **5th August, 2020, Dr. Mahtab Bamji**, Dangoria Charitable Trust, Hyderabad spoke on "Food and Nutrition Security are Vital for Sustainable Development of India". Today India is facing the double burden of pre-transition disease like malnutrition and communicable diseases (Covid 19 being the latest and most sinister), and ageonset post transition non-communicable diseases like obesity, BP, diabetes, CVD and cancer. India is the diabetes capital of the world. It has one of the highest incidences of hunger and under-nutrition in the world. Every third child is born with low birth weight. Intrauterine malnutrition predisposes the foetus to adult onset diseases (Barker's Hypothesis) in later life. In view of this scenario in India, Dr. Bamji suggested that there should be a lifecycle approach to female health and nutrition. Diet surveys show that Indian diets are qualitatively very deficient in micronutrients (MN)-vitamins and minerals due to low intake of MN-rich foods like vegetables, fruits, pulses and foods of animal origin. To combat micronutrient deficiency, food- based approach to ensure dietary diversification is the most sustainable. However, Pharmacy based approach is sometime essential if the problem is acute like iron deficiency anaemia or vitamin A deficiency. Food fortification is another powerful method and has shown promising results with iodized salt. Salt double fortified with iodine and iron has been developed by National Institute of Nutrition, Hyderabad. Refined Oils are being fortified with vitamins A and D.

   Dr. Bamji shared her experience with farm-based approach in the villages of Medak district, Telangana State. Women were taught to raise backyard nurseries and sell the plants as planting material for the project. Family diet surveys showed significant improvement in the consumption of Green leafy and other vegetables. Simple pamphlets with right messages helped education since literacy levels among women have gone up significantly in recent years.

   After Dr. Bamji's talk, Dr. Ratna Kollur, Convenor, Hyderabad Branch enlightened the participants about the glimpses of the Triennial Conference that took place at Hyderabad during December, 2019. About 49 participants attended the webinar. Dr. Paramjit Anthappan compered the program. Dr. Sunita Mahajan introduced the speaker, Dr. Mahtab Bamji and Dr. Rita Mukhopadhyay introduced Dr. Ratna Kollur. Ms. Vijaya Tilak summarized the talks. The judges of the mushroom recipes, Dr. Smita Kekatpure and Ms. Deepti Yadav, announced Ms. Kalpana Sathe as the winner. The judges of the mushroom photography, Dr. Sushma Lehri and Ms. Ambika Jayaraman announced Ms. Sweedle Shivkar and Ms. Sakina Gadiwala as winners. There was an announcement for the participants to send entries for a contest on "Posters on Nutrition".

7. **Dr. Rita Mukhopadhyay**, Vice President, IWSA delivered the seventh talk of the series on “Ethnozoology – The Indian Cattle” on **12th August, 2020**. The narrative touched on ancient history, domestication and birth of Indicine line of Indian cattle, its primary need for trading as mobile property, use of products in Vedic rituals, to the relationship with humans across religion, culture, and geographical territories. Revival of animal husbandry after fodder famine, establishments of dairy leading to white revolution was mentioned complimenting aptly with growth of genetics and genomics studies for maintenance of pure breeds. Importance of experiantial learning lies in the holistic approach, hence representative visual arts and literature on the Indan cow were part of this talk which included a video clipping from the movie 'Manthan' depicting the lives of women in the cooperative dairy industry of our country. About 44 participants attended this webinar. The program was compered by Ms.Tripta Tewari. Ms. Chhaya Kelkar introduced the speaker. Poster competion judges Ms. Priya Jacob and Ms. Sukhvinder Sandu anounced Ms. Vijaya Chakravarty and Dr. Sushma Lehri as the winners of the poster contest. Ms. Vijaya Chakravarty announced a Jingles Contest about Cattle for the next week’s talk.

8. On **19th August, 2020**, **Ms. Manik Gade**, member of IWSA and Friends of Trees, presented a talk on “The Chelsea Flower Show” under the “Member Enrichment Program” of Learning Garden, IWSA. Royal Horticulture Society (RHS) is the UK's leading gardening charity, dedicated to the encouragement and improvement of the science, art and practice of horticulture in all its branches. Its flower shows are among the world's greatest gardening events and retain a strong horticultural focus. Each flower show is carefully planned to ensure it contains the correct balance of exhibitors, and that any particular product category is not over-represented. This careful planning ensures exhibitors enjoy a good show, and return to exhibit year on year. The Chelsea Flower show is one of the shows organised by RHS in the month of May every year. Ms. Manik Gade presented pictures from the Chelsa Flower Show, which she had taken while visiting the show in the year 2010, showing the large gardens, the great pavilion houses with the best flowers and fabulous art displays. The RHS has been planning and executing these shows for over 100 years. Ms. Manik Gade shared her experience with the 42 participants who attended this webinar, through her photographs which exhibited plants from world renowned nurseries and flower growers and innovative garden designs by landscape designers.

   Ms. Manik Gade’s talk was followed by a talk by Ms. Priyanka Abdar, an employee of RBI who lives in IWSA Hostel. Ms. Abdar spoke on “Lockdown Diary” and shared her experience and methods to handle the present lockdown situation. The program was compered by Ms. Bhuvaneswari Ramanathan. Ms. Sakina Gadiwala introduced Ms. Manik Gade and Ms. Anita Dash summarized the talk. Ms. Bhuvaneswari Ramanathan introduced Ms. Priyanka Abdar and summarized her talk. Ms. Bhuvaneswari Ramanathan and Ms. Snehlata Bhavsar were judges for the jingles contest and announced the following contestants as winners : (1) Ms. Vaijayanthi Bhosekar, (2) Dr. Shyamala Bharadwaj and (3) Dr. Lalitha Dhareshwar. Ms. Vijaya Chakravarty announced two contests for the next week’s talk (1) Lockdown Diary and (2) Flower Arrangement

9. On **26th August, 2020**, **Dr. Hameeda Bee**, Assistant Professor, Department of Microbiology, Osmania University and Member, IWSA, Hyderabad Branch, delivered a lecture on “Microbiome Overview: Human and Plant Health”. Microbiota are different

ecological communities of commensal, symbiotic and pathogenic microorganisms found on all multicellular organisms studied to date from plants to animals. Dr. Hameeda explained about the microbiota including bacteria, archaea, protists, fungi and viruses. A variety of factors can balance this microbiota which can have impact both on human and plant health. Trillions of microorganisms have evolved and continue to live on and within human beings which play an important role in human health and disease. Human microbiota, especially the gut microbiome plays a significant role to maintain human health by playing role in digestion and also benefit our immune system. She also discussed about similar microorganisms that colonize on plant surfaces and tissues and play an eminent role in natural vegetation to intense agricultural production, plant health, community composition and ecosystem functioning. In addition, the recent pandemic Covid-19 has pushed the whole world to the brink, hence it becomes necessary to understand this disease better. Therefore, she emphasized that we would try to understand the significance of microbiome for human and plant health and also look on for the plausible role of gut microbiota in modulating immune response in Covid 19.

The program was compered by Ms. Priya Jacob and Dr. Sangeeta. Presidential address was given by Dr. Lalitha Dhareshwar. Ms. Priya Jacob introduced Dr. Ratna Kollur, Convenor of Hyderabad Branch of IWSA and requested her to introduce the speaker, Dr. Hameeda Bee. After the talk, Dr. Sangeeta presented a wellness video and conducted the question & answer session. Dr. Rita Mukhopadhyay summarised the talk, followed by Shairis by Ms. Madhu Pahwa and Ms.Snehalatha Bhavsar. Ms. Madhu Pahwa and Dr. Srirupa Mukherjee who were the judges for the flower arrangement contest announced the following winners : (1) Ms. Sangita Podtar, (2) Dr. Devaki Ramanathan, (3) Dr. Sushma Lehri and Ms. Monisha Sarkar(consolation). Ms. Maitraiyee Paul and Ms. Sudeshna Jana were the judges for the lockdown diary contest and announced the following winners: (1) Dr. Rita Mukhopadhyay, (2) Dr. Sunita Mahajan and (3) Ms. Sudha Mehta.

Nursery School and Education Committee

1. ECCE students & teachers attended a webinar on 16th May 2020 on "**Your Child Friend or Foe? – How much is too much?"** by Dr. Swati Popat Vats , President, Early Childhood Association .
2. ECCE students and teachers attended Webinar on "Helping Children thrive – Parenting for Covid Times" on 23rd May 2020.
3. IWSA in association with Drishti, started ADHD & LD course and shadow Teacher course online from 15th June, 2020. A Webinar was conducted on 10th June, 2020 on "Orientation on Capacity Building Programs" by Mrs. Vinita, Co-ordinator of the course.
4. Digital platform facility for ECCE course started from 14th July, 2020.
5. Online Exams for Semester II (for 2019-20 batch) were conducted on 18th & 20th July 2020 as per the guidelines from SNDT University.

6. The parents interaction with Nursery parents was organised on 25th July 2020. Mrs. Ranjana gave a talk on “Natural Learning and Role of parents & caretakers in it.”

7. 25th Batch of ECCE students commenced from 4th August 2020. There are 13 students in this batch. Orientation program was held for them on 4th July, 2020. Dr. Nootan Bhakal introduced them to IWSA and its activities. Mrs. Rekha Pradhan spoke about ECCE course, curriculum and structure of the course, internship, placement etc.

IWSA’s Hostel and Day Care Committee

1. Independence Day Celebration

Independence Day was celebrated in collaboration with K J Somaiya Institute of Engineering and Information Technology, Sion, Mumbai (KJSIEIT). Prof Sandhya Deshpande of KJSIEIT arranged to show the program online through her students. Flag hoisting was done by our hostel supervisor Ms Celine Almeida at 9 am on the IWSA premises. All members and hostel girls sang National Anthem. Hostel girl Ms. Trisha Kaushik presented a song and played it on the guitar.

This was then followed by a recorded talk by a Scientist, historian and writer Ms Urmila Rau Lal. She had witnessed the first flag hoisting of Independent India. She was with Mahatma Gandhi two days prior to his assassination. She had participated in Dandi satyagraha along with the granddaughter of Bapuji. Ms. Urmila Rau Lal had worked in DRDO, Ministry of Defense, when Dr Abdul Kalam was in the Aviation Department. Ms. Urmila recalled several moments of our freedom struggle and the determination of our freedom fighters, which should inspire the present younger generation and motivate them to contribute to the progress of our nation.

Prof Sandhya Deshpande then read out a quote about feeling to be a proud Indian. She had arranged to show three films from the Films Division of India specially for the children. These were:
(1) About Border Security Force,
(2) The Silent Arm and
(3) The Unsung Heroes where we could see the participation of common people in the Freedom struggle.
The program ended with singing of National Anthem. Prof. Sandhya had also arranged an essay competition for school children on the topic "Ek Chitthi Sainik Ke Naam". There were more than 50 participants. It was decided that 3 Best letters will be published in our newsletter.

2. **Participation of Day Care Children in the drawing Competition arranged by Drawing Competition Academy, Balmanch, UJJAIN.**

IWSA’s Day Care Centre supervisor Ms. Sudha Mehta encouraged the DCC children to participate in the above mentioned drawing competition. Our day care children not only participated in the competition but also won prizes. Aarisha Godbole, Prananshi Pragya, Vasundhara Patil, Pari Kulkarni and Akshara Jankoli won the prizes for their drawings about COVID 19.

Reports from Branches

Amravati Branch

Slogan Writing Competition on the theme "Our Solutions are in Nature" held in May, 2020

To celebrate "International Day of Biological Diversity-2020" a 'Slogan Writing Competition' was organised by IWSA, Amravati Branch. Due to Covid-19 pandemic, the competition was conducted online. The theme for the Slogan Competition was 'Our Solutions are in Nature'. The flyer of the competition was circulated on 5th May, 2020 and the last date for sending the slogans was 25th May, 2020. Thus, sufficient time was given to the participants. There were 50 entries in the competition, majority of them from the students. Some of the slogans were pictorial and with appropriate message.

The judgement of the competition was done by IWSA, Amravati Branch members, Dr. Mona Chimote and Dr. Reena Lahariya. The winners of the competition were: Anushka P. Kochar, (First); Adwit S. Patil, (Second) and Shrinidhi H. Bisne, (Third). The winners were given the cash prizes by online payment and e- certificates were sent to them. Certificate of participation was given to all the participants. Dr. Deeplaxmi Kulkarni, IWSA, Amravati Branch Convener coordinated this activity.

Baroda Branch

Slogan Competition on World Environment Day

Indian Women Scientists' Association, Baroda Branch in association with Department of Botany, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara celebrated World Environment Day-2020 by organising an online slogan writing competition. Every year on 5th June World Environment Day is celebrated to spread awareness among common people about the issues of the environment. For 2020, the theme for World Environment Day was 'Celebrate Biodiversity' which was a relevant theme because human beings cannot survive in isolation as biodiversity is important for the survival of everyone. While all are facing a health pandemic, this seems to be the apt time to celebrate World Environment Day virtually. With this thought, IWSA-Baroda Branch picked up this opportunity to hold a slogan competition with the theme as *'Destruction of Ecosystem and the climate crisis is hurting humanity, with Covid-19 a 'clear warning shot'*. The objective of this competition was that by facing Covid-19, every person should become conscious about the impact of his/her actions on his/her health.

A large number of students from different schools, universities and colleges participated in this competition, which was conducted in three different languages, i.e. English, Hindi and Gujarati. Total 25-30 entries were received under each category. The participants enthusiastically made posters and submitted along with their slogans, which brought out

their creativity and interest in the competition. Under each language category, three prizes were declared.

Bengaluru Branch

Webinar on Role of Microorganisms in Biodiversity Conservation and Sustainable Development on 6th June, 2020

A webinar was organized by Department of Biotechnology, BMS College of Engineering and Department of Biochemistry, Indian Academy Degree College Autonomous in collaboration with Indian Women Scientists' Association, Bengaluru Branch. This webinar was organized on occasion of World Environment Day on 6th June 2020 at 11:00 am. The speaker was **Dr. Sangeetha Menon,** Assistant Professor, Department of Life Sciences, Kristu Jayanti College, Bangalore. She spoke on the topic "Role of Microorganisms in Biodiversity Conservation and Sustainable Development". Anthropogenic activities have caused massive destruction of biodiversity and loss of biodiversity is not only an environmental issue, but also a developmental, economic, security, social and moral issue as well. United Nations has put forth one of the sustainable development goals (SDG) to conserve biodiversity along with many other important issues of human concern. Dr. Menon presented facts on how nature protects us from potential pandemics. She also reflected upon how the corona pandemic has affected mother earth. She also discussed the role of microorganisms in conserving biodiversity and sustainable development She shared her research work and experiences in the field of forest trees and degraded shola forests and how microorganisms can serve as growth booster in the form of biofertilizers, and protect the trees and crops from pests and diseases by acting as bio-control agents and biopesticides. She also stressed on the importance of microorganisms in mineral cycling. The audience was encouraged to preserve the biodiversity through small acts of conservation.

Delhi Branch

Webinar on 'Science and Sprituality of Yoga ' by Dr Shilpy Gupta on 14th June 2020

The International Day of Yoga is celebrated all over the world annually on June 21 to raise global awareness about the benefits of the ancient Indian practice. In lieu of that IWSA Delhi Branch organised a lecture titled 'Science and Spirituality of Yoga' on 14th June 2020. The talk was presented by Dr Shilpi Gupta (Doctorate in climate change from ISRO, worked in areas Environment, Social Sciences, Sustainability and Art of Living). The lecture was organised as an online presentation due to the current pandemic situation. About 35 participants from IWSA Delhi branch as well as from IWSA headquarters participated in the online event.

Hyderabad Branch

Activities During Lockdown

Dr. C. Anjali Devi, IWSA Member, Professor (retired) Department of Food and Nutrition, Osmania University and Former Registrar Sri Padmavathi Mahila University Tirupati along with Dr. K. Ratna, Convenor, IWSA, Hyderabad Branch, carried out the following activities during the lockdown period.

1. Presented talks on dietary tips to improve immunity and fight corona virus on various days. These talks were telecast on ETV Sukhibhava , ETV Bharat and MAHA TV.
2. New cloth was collected from houses nearby and a group of 3 women stitched nearly 300 masks. These were distributed to municipal workers, drainage workers, water works people, garbage collectors, para medical staff and for members of Mahila Mandali and Colony Welfare Association, who attend various requirements of the colony during the lockdown period. Dettol soap was also given along with masks to workers.
3. Rice, wheat, oil and dal was distributed to these workers in three rounds.
4. Competitions in drawing, painting, essay writing, embroidery, were conducted.
5. Micro greens cultivation was introduced among the residents of the colony as a move to increase vitamin and mineral intake and improve immunity.
6. An International online Quiz "Quarantine Covid-19 - Quiz 2020" was conducted, spreading over nine days from 20th April to 28th April 2020 consisting of five rounds. Details are as follows:

   ROUND I SPORTS (Badminton, Tennis, Table tennis, Football, Basketball, Throw ball)
   ROUND II CORONA VIRUS
   ROUND III DIET TO FIGHT CORONA (Diet-for immunity to prevent corona)
   ROUND IV MYTHOLOGY
   ROUND V GENERAL SCIENCE.

   Each ROUND had 20 multiple choice questions X 5 rounds = 100 multiple choice questions, making a total of 100. Marks. All answers were taken through WhatsApp.

   A total of 125 persons participated and the participants were from Telangana, Andhra Pradesh, Mumbai, Bangalore, USA, Canada, Australia and Muscat.

   The participants were from all walks of life - software professionals, bank officers, post graduate students, Indian Women Scientists Association members, teachers, dieticians, and housewives. It was very encouraging and we wish to continue to conduct similar events.

Kolhapur Branch

1. Webinar on Avenues in Plant Research on 12th and 13th June, 2020

Prof. (Dr.) Niranjana Chavan delivered a talk on "Avenues in Mangrove Research" in the webinar organized by Post Graduate Research Centre, Department of Botany, T. C. College, Baramati, on 12th and 13th June, 2020 on the occasion of "World Environment

Day". Prof. Chavan elaborated on all the information regarding avenues in mangrove research. During her talk, she briefly described the past research, present status and need of research in future on this topic. In addition, she covered the basic and higher-level research on mangroves carried out by her and her team. More than 600 participants attended the webinar.

2. Celebration of World Mangrove Day on 26th July, 2020

One Day State Level Webinar on, "Konkan Kinarpattivaril Mangalvane" (Mangrove Forests of Konkan) was organized by Indian Women Scientists' Association (IWSA) Kolhapur Branch in collaboration with Department of Botany, N.S.S. Unit, Br. Balasaheb Khardekar College, Vengurla and Mangrove Foundation, Malvan for conservation of mangroves through community participation for wise development.
There were two speakers in this webinar: 1. Dr. Mahesh Vijay Gokhale, Department of Botany, KBP College, Islampur and 2. Mrs. Durga Thigale, Biodiversity & Livelihood Specialist, Mangrove Foundation, Malvan.
Dr. D. S. Patil anchored the webinar and introduced the guests. Prof. (Dr.) Niranjana Chavan, Convener, IWSA Kolhapur Branch, presided over the session and briefed the need of skill development thorough academic and research institutes for making mangrove forests as a mangalvane. After that, Dr. Mahesh Gokhale delivered a talk on, "Konkan Kinarpattivaril Mangalvane" (Mangrove Forests of Konkan). In his talk, he covered all the characteristics in detail, how mangrove forests are beneficial for development of coastal areas and community input for conservation of mangrove forests. Then, Mrs. Durga Thigale gave information about the work carried out by mangrove foundation for conservation of mangrove forests through livelihood development activities. Dr. Seema Gaikwad Co-convener IWSA Kolhapur Branch concluded the programme by giving vote of thanks. Total 37 participants were present.

In addition to this webinar, Mangrove Society of India had organized a National Webinar entitled "Mangrove Forests and Human Security" on the occasion of World Mangrove Day 26th July, 2020, where, Prof. (Dr.) Niranjana Chavan, Convener- IWSA, Kolhapur Branch served as a resource person for the webinar. She explained the role of mangroves in shoreline protection, use of mangroves as food, fodder, medicine, etc. She also emphasized on regeneration, conservation and protection of mangroves through community contribution as well as academic and scientific involvement. There were 117 participants for the webinar.

3. Online International Mati Making workshop on 18th August, 2020

MATI of Maharashtra especially in Konkan is a traditional floral design art which has specific fruits, flowers and threads. It is wise way of Lord Ganesha decoration which comprises medicinal plants with great remedial potential. To understand the history of Mati making, science behind Mati designing, techniques of traditional leaf manipulation, online International Workshop on, "MATI" making was organized by Br. Balasaheb Khardekar College, Vengurla, in collaboration with Indian Women Scientists' Association (IWSA) Kolhapur Branch**,** Gardens Club, Kolhapur and Institute of Floral Design (IFD), Mumbai on 18th August, 2020.

Mrs. Kalpana Sawant talked about the purpose of the webinar and introduced the guests. The programme started with Garhane video by Pritish Lad and his team. Prof. (Dr.) Niranjana Chavan, Convener, IWSA Kolhapur Branch, presided over the session and briefed the ecology and science behind MATI. After that, Ms.Seema Jhaveri, IFD, Mumbai delivered a talk on, "Scope and Opportunities through Floral Design". Dr. Dhanashree Patil gave information about the importance of MATI. Mati- traditional way of floral design was presented by Mr.Nitin Kavthkar and Mati making demonstration video by Mr. Madkar, Leaf manipulation techniques video were played by Ms. Neha Gawade and Ms.Komal Mayekar. The presidential speech was given by Dr. Anuradha Mujumdar, Dean, Science Faculty, Mumbai University. The programme was anchored by Ms. Sahili Ninave and zoom meeting was handled by Mr. Raghunandan Chaudhari. Ms. Seema Gaikwad Co-convener, IWSA Kolhapur Branch concluded the programme by giving vote of thanks. A total of 87 national and international participants attended this webinar.

Nagpur Branch

1. "World Environment Day" (Twin Yoga Session) on 21st June 2020

Indian Women Scientists' Association (IWSA), Nagpur Branch in collaboration with Rejuvenate Center for Yoga, Ayurveda and Stress Management celebrated World Environment day in an innovative way. Women Researchers and Scientists from an intellectual group of Indian Women Scientists led by the Founder member Dr Anuradha Gadkari and the Convener Dr Pradnya Bhalerao celebrated the day on the occasion of The International Day of Yoga on 21st June 2020 with the Theme **"A Happy Environment with Family through Yoga".** An Online Twin Yoga session was organized for the members and their families. The Program was arranged by IWSA Life member, Dr Bharati Gidwani and coordinated by the past Convener, IWSA, Dr Rita Israni.

The program merged with this year's theme for the International Yoga Day – **"Yoga at Home, Yoga with Family**". Twin Yoga is about the Asanas performed together in a pair forming a mirror image of each other. Dr. Shreyasi and Dr. Abhijeet Bharadwaj illustrated the pairing postures. It also requires some amount of balancing each other's body and hence there is great excitement. The purpose of pairing is to establish a stronger bond amongst the family members, having laughter and fun. It helps create relaxation and confidence while performing **Asanas**.

The Members participated in large numbers making the program a great success. Besides the participants from Bangalore, Mumbai, Pune, Hyderabad and Nagpur, Yoga disciples from the United States of America (USA), Dubai and Australia too joined the Twin Yoga session. Around 98 individuals enthusiastically joined and enjoyed yoga pairing with a family member. The Online Yoga event was very well received and appreciated by the participants.

2. Online talk on "COVID 19 Updates" on 8th August 2020

IWSA Nagpur had organized a talk on "COVID-19 UPDATES" by Dr Vivek Agwan, an eminent medical microbiologist, a Consultant and Executive Member Vidarbh Association of Microbiologists, who is a Professor at GMC and IGMC Nagpur and also ex Associate Professor at Tripoli University, Libya. Dr Agwan elaborated upon different viruses that cause respiratory diseases. He explained why Corona is more harmful than others. He discussed about methods in management of COVID- 19. Use of convalescent plasma, hydrochloroquin, remdesivir or, antipyric medicines were explained in detail. He emphasized upon preventive measures like sanitization, social distancing, using mask and good nutrition. At the outset Dr Pradnya Bhalerao, Convener, welcomed everyone for this virtual program. Dr Dipti Andhare spoke on the history of pandemic.

Articles

Brief Overview of Online Education, and my Experiences with some Rural Schools in Maharashtra

***Dr. Sheela Donde**, Former Vice Principal, and HOD, Department of Life Sciences and Biochemistry, St. Xavier's College (Autonomous), Mumbai; Former Visiting Faculty, IISER, Pune; INSA Teacher awardee 2013, drdonde@gmail.com*

A Greek philosopher once said, *"The only constant in life is change*"

When can this statement be more relevant than in the current context of the COVID-19 pandemic and digital education?

It was way back in 1840 when a British educationist, Isaac Pitman, pioneered the concept of Distance Education when he started teaching shorthand by correspondence. Correspondence education started in India in 1962 with Delhi University establishing a School of Correspondence Courses and Continuing Education[1].

From Distance education in the 1960s to Digital education in the 2020s, traditional education has gone through a transformational change. With the arrival of commercial radio in 1900s, TV in 1940s, and computer in 1950s, technology gradually found its way into the field of education. 1950s – 1960s saw the growth of video conferencing, 1960s -1980s saw the advances in Tele-conferencing and 1990s to the present are seeing advances in web-based instruction[2]. The 2000s saw e-learning entering the business world. As of 2010, e-learning has been inspired by social media such as YouTube, Instagram, Facebook live, Twitter, iTunes, Skype, etc.

The current COVID-19 pandemic has impacted every sector–the education sector in particular. It has made online education a necessity, in fact the only alternative to traditional education. EdTech firms are on a hiring spree, the key functions in demand

being technology, marketing and sales and content and pedagogy3. Funding in this sector has shown a growth of 4.5 X since 2019. The demand for e-learning solutions and learning Management Systems is at an all-time high. Video calling platforms like Zoom, Google classroom, Skype, and Facebook Live are being refined to suit the needs of educational institutions for holding virtual live interactive classes integrated with attendance recording, video uploading options, quizzes, assignments, tests, feedback etc.

India is a country of 1.3 billion people, where 67% of the Indian population lives in rural areas. Out of approximately 196 million elementary school going children, 146 million are enrolled in rural Government schools (Source: U-DISE 15-16)[4].

India has the second largest internet userbase in the world with over 630 million subscribers (more than the population of US, UK, Russia and South Africa together)[5]**.**

India also has the cheapest mobile data in the world, but internet penetration is only about 66%, (National Institute of Public Finance and Policy report, 2020). In villages the internet density is 25.3%, whereas the internet density in urban areas is nearly 97.9%. Only 16% of Indian women use the internet (BBC News 17th October, 2019).

The online education market in India was worth 247 million USD in 2016 and expected to grow to 1.96 billion USD by 2021 (annual growth of 52%). Users will jump from 1.6 million in 2016 to 9.6 million in 2021[6,7]

It is estimated that cost of classroom education has increased by about 175% and hence in comparison, cost of online education is more cost effective.

Online education is a game changer. With its wide accessibility, flexibility, affordability, ability for reflective evaluation of learning experience and the possibility of integrating audio, video, graphics, animation, text and live streaming, online education will bring about a paradigm shift in our education system to impart quality education to our masses. The National Education Policy (NEP 2020)[8] has addressed several issues pertaining to online education in both urban and rural India. Implementation of these policies, by finding solutions which are economically viable, scalable and sustainable, is a huge challenge as well as an opportunity to make India the education hub of the world in the next 10 years.

There are two kinds of digital learning and teaching strategies that schools can adopt based on feasibility:

• Synchronous or on-line mode: This is real-time live teaching and learning that can happen collaboratively and at the same time with a group of online learners or even individually and a teacher, with some method of instant feedback. Examples of synchronous learning are online teaching through video conference, audio conference using satellite or telecommunication facilities. This can be employed where computer/smartphone and internet facilities are available.

• Asynchronous or off-line mode: This is anytime, anywhere learning but not connected on real time, for example, emails, SMS, MMS, surfing e-content from e-learning platforms, listening to radio, podcasts, watching TV channels or recorded DVDs etc. This can be adopted where there is no computer or no/low bandwidth internet available.

Strengths and weaknesses of on-line /digital education

Strengths:

- Learner centric – dependent on self-motivation
- Can be made engaging, personalized, active and socially relevant
- Widens the scope, breadth and depth of information access, thus expanding the knowledge base beyond the traditional classroom
- Affordable – cost of online education is only a fraction of the cost of in-person education
- Flexible – accessible at any age, anytime, anywhere, can study international programs sitting at home
- Self-paced learning – lessons can be recorded, stored and played back for revision, reflection, research, critical thinking and analyses
- International guest speakers or visiting faculty, subject experts, industry experts, scientists etc. can be easily accessed – a treasured addition to curriculums and unforgettable experience to learners
- Time efficient - multiple and diverse courses can be accessed in free time, working individuals can simultaneously continue with education
- Travel to educational institution not necessary – time and energy saving, less stress, less polluting hence environmentally friendly
- Recognition of online degrees in the job market
- Pursuing hobbies, improving employable knowledge and skills, increasing self-dependency
- Collaboration with peers in virtual study groups from across the globe
- Multiple channels of communication with teachers/mentors/peers

Weaknesses:

- Impersonal, hence emotions, expressions and values depicted through body-language are missing, particularly where online streaming is not feasible
- Self-learning hence largely dependent on self-motivation and determination
- High distraction rate – as against face-to-face learning which uses “no-phone” technology, household distractions from other family members or activities, noise in the neighborhood
- Lower retention and performance
- High drop-out rate
- Can prove to be a health hazard – due to several sedentary hours of on-screen time which could be harmful to the eyes
- Multitasking while doing an online course – texting, emailing, watching videos, listening to music, playing video games
- No hands-on labs / workshops / internships for experiential learning - for learning technical skills and experience for professionals in science, engineering, construction, automobile, farming, health care etc. Computer simulations and virtual labs are the closest one can get
- Not all teachers are tech savvy, do not possess computers, or digital devices

- Not much standardized vernacular teaching material available online
- No scope for learning crucial life skills like interpersonal relations, formation of networks, development of soft-skills, social skills
- No extracurricular activities or outdoor sports activities
- Fraudulent on-line courses

So, will digital education replace traditional education?

A blended educational system, leveraging the advantages of both, will be the ideal solution.

Challenges - in the rural sector:

Children from rural areas coming to Gram Panchayat primary schools at the age of 6 years, are about 3 years behind their urban counterparts in terms of their cognitive development, socio-emotional-ethical development, cultural/artistic/creative development, and the development of communication, language literacy, and numeracy. The early childhood training that urban children receive in nursery/daycare/pre-primary centers, is completely lacking in rural children, since anganwadis (which are supposed to be the rural equivalents of Early Childhood Care Education centers) are hardly existent. Lack of training and exposure to different age-appropriate developmental tasks in the early years, reflects in the poor cognitive, social, emotional and creative skills of primary school learners, leading to poor performance, and abysmally low learning outcomes in rural primary school children.

These *disadvantaged* primary school learners, get promoted every year based on their age, regardless of their learning capabilities, and enter secondary schools. Here I would like to share my thoughts, based on **my personal experiences with school education in the rural sector** at three levels:

a) teaching Math online for two and a half years, to children of Classes 6 and 7 from a Zilla Parishad Government school in Ghospuri, situated in the rural area of Ahmednagar district, Maharashtra, through the NGO eVidyaloka[9]

b) delivering invited lectures as an INSA Teacher Awardee, to several schools and colleges in rural India under the INSA Rural Lecture Program for 3 years and

c) personal visits to several Zilla Parishad schools around Pune, just out of interest to contribute towards improving their education.

Education of children in village schools is entirely dependent on the motivation, initiative, willingness and attitude of two individuals: 1) sarpanch of the village 2) schoolteacher / principal, regardless of whatever schemes the Government may want to implement.

Secondly, most village schools have very poor basic infrastructure, like classrooms without sufficient ventilation or fans, leaking roofs, broken windows, no separate clean toilets for boys and girls (As per the report from Annual Status of Education Report 2018, only 66.4% of schools have usable toilets for girls)[10], poor drinking water supply,

insufficient lights and plug points, no sustained electricity, no playground for sports activities, no place for having their mid-day meals etc.

In addition, the following challenges are specific to majority of the rural schools:

- Insufficient classrooms – students of 4 different classes (Class 1-4) sit in one room with one teacher – thus poor teacher-student ratio and poor learning quality.
- Poor Foundational skills – Due to poor learning quality, foundational skills in reading and Math are of very low standard. As per ASER 2018 data[10], only 73% of Std VIII students can read a std II level text. And only 44% of children in Std VIII can solve a basic arithmetic problem[11].
- Access to the school is not always easy – students in small villages sometimes have to travel for an hour and a half by boat, or on foot, sometimes through forest or hilly areas to reach the closest primary school - there is no transport facility
- Secondary schools are even fewer and far between. For schools after class 8, students have to travel to / live in the closest taluka place where a school is available, hence school drop-out rate at this stage is very high due to logistic, financial and safety constraints, girls being the most affected. As per the right to education act children are provided free education only till the age of 14. As per education statistics of 2018 by MHRD, only 43.1% of rural student's enrollment in senior secondary, and 14.2% in higher education is reported in India[10].
- Lack of trained teachers – teachers are unwilling to shift to digital education due to rigid mind-sets, unwillingness to invest time in learning new skills, no computer literacy, lack of confidence, no incentives to change
- Poor teacher commitment – teachers get transferred every 3 years, to remote villages without proper and safe accommodation or transport. This particularly affects the female teachers. Fortunately, the National Education Policy 2020[8] has addressed this issue and has discontinued frequent transfers of teachers.
- Poor attendance of teachers and students – lack of motivation, lack of transport to and from school
- Uneducated parents - cannot help their child in academics, and also do not realize the need for education
- Financial constraints –Education becomes a second priority since they are forced into income generation activity for survival. Some school children attend school without even footwear or rainwear, without tiffin.
- Lack of a library for reading beyond text-books, hence low on general knowledge and awareness of the outside world
- Low digital literacy due to lack of access to digital learning tools - like smart phones (generally only one mobile per family which is used largely by the head of the family) and mobile data plans, computers, tablets, internet, devices for video calling. As per the ASER 2018 report, 55.5% of students have never used computers[10].
- Poor electric supply, recharge problems, connectivity and signal issues, low band width
- Lack of facility for sports training /equipment and after school extracurricular activities hinders the all-round development of the students.

Opportunities:

In spite of all these constraints, in my experience, I have seen Gram Panchayat / Zilla Parishad (ZP) schools imparting education ranging in quality from "pathetic" to "commendable".

In a hilly remote village in Sindhudurg district of Maharashtra, I came across a Zilla Parishad school, where the principal and teachers of the school taught their students life skills very relevant to their needs (like distinguishing between poisonous and non-poisonous snakes, and protecting themselves), animal husbandry, poultry farming, lessons on debunking superstitions and religious myths etc beyond school hours. Besides they also arranged for books and extra coaching for 10th and 12th standard students free of charge, after school hours, and arranged for food and transport for these students with the help of parents.

In another ZP school off Pune, purely on the initiative of a single teacher, with the help of national and international organizations, the whole school has been made solar powered, has state-of-the-art digital equipment and well equipped science labs, has open-ended teaching-learning curriculum, has employed language teachers to teach 5 different foreign languages, students design their own software, undertake socially relevant research projects partnering with research institutes, and are ready to compete in international competitions.

So, there is hope……

Digitalization is the only way we can deliver equitable, scalable, sustainable and economically viable quality education to our masses. Taking advantage of our largely young population, with the support of the Government agencies, NGOs, industries, IT sector professionals, entrepreneurs, social reformers, educationists and volunteers we can strive to make India a knowledge powerhouse of the world.

Digital initiatives taken by the government of India is one of the factors fueling the growth of online education. **The Central and State Governments, several NGOs, industries in the form of CSR activities, and individuals have taken several initiatives towards providing access to digital education for school teachers and students in India, particularly for the rural population[12]**. To name a few, under the purview of SHAGUN the Central government has launched three e-learning platforms: NREOE (National Repository of Open Educational Resources), DIKSHA (National Digital Infrastructure for Teachers) to equip teachers of Class 1-12 into the world of e-learning, and e-Pathshala for audiovisual aids available in several languages. The recent launch of PM e-Vidya platform[13, 14] will unify all efforts related to digital/online/on-air education. Besides, NEP 2020[8] has given tremendous emphasis to digital education, right from the level of Early Childhood Care Education (ECCE) upwards.

Along with Homi Bhabha Center for Science Education (HBCSE), and Maharashtra Knowledge Commission Ltd, Maharashtra Government launched the Open Education Resource website[15] for providing free access to teachers, students and parents of Class 5-9 to multimedia resources for their syllabi. Through SCERT the government has attempted

to provide solar power to the villages to overcome the lack of electricity issue for digital education, and is now seeking 12 hours of airtime on DD channels and 2 hours of AIR time for relaying educational programs on TV and radio for rural and adivasi children. Several NGOs like EnglishE.Teach[16], ThinkZone[17], ThinkSharp[18], eVidyaloka[9] etc have contributed towards implementing the national agenda of providing digital education.

Tremendous scope and opportunities have surfaced for the **EdTech sector** to innovate their products to suit the needs of users, expand and upscale their products particularly for the Tier II and Tier III cities, towns and villages.

Teacher training is at the core of implementation of digital education policies, particularly at the school level in rural areas, where the only resource students have is the teacher. Huge investments have to be made in terms of budgetary allocations, designing teacher training modules, conducting teacher training workshops, incentivizing teachers to learn digital education hardware and software, and providing technical and administrative support for teachers while emphasizing the advantages of online education.

It is equally important to maintain, and exercise **quality control on the e-content** of digital media, to impart information that is factually verified, unbiased, and non-controversial. This will ensure that "fake/incorrect information" does not influence young minds.

In summary, it may not be wrong to say that the COVID – 19 pandemic has proven to be a blessing in disguise for the education sector, since it has helped us leap-frog into the world of digital education!

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Dr. Sheela Donde

Bhoini School Students

Ghospuri School Class V Students

Ghospuri School Class VII Students

Dr. Sheela Donde, completed her PhD in Molecular Biology from TIFR, Mumbai. She did her post doctorate at Carnegie Mellon University, USA. She was Vice Principal, and HOD, Department of Life Sciences and Biochemistry, St. Xavier's College, Mumbai and Visiting Faculty, IISER, Pune. She received recognition as INSA Teacher in the year 2013. Currently, she is a Volunteer teacher with eVidyaloka for teaching rural school children. Dr. Donde is also an IWSA member.

Effect of Lockdown on the Environment due to COVID-19 in India

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The world witnessed an unprecedented situation in the time period from March to May 2020, with major countries in the world declaring national emergency and complete lockdown due to the pandemic disease, COVID-19. The sudden decline in manufacturing, trade and travel disrupted the supply chain network, leading to severe social and economic issues. However, amid all this, there was a silver lining- many positive effects on the environment were reported by scientists from different parts of the world, including India. This rejuvenation encompassed all the aspects of environment, of which a short summary is given below.

All the public transport, industrial and production units, air travel etc. came to a standstill, thus reducing toxic, hazardous and harmful chemicals and pollutants in the atmosphere such as NO_2, carbon monoxide (CO), particulate matter (PM), sulfur dioxide (SO_2), ozone (O_3), etc. in all major cities. Ghaziabad, one of India's highly polluted cities, recorded about 85.1% reduction in $PM_{2.5}$ during this lockdown! Air Quality index (AQI) which divides the air quality into six categories from Good (with AQI ranging between 0 to 50) to Severe (AQI > 401) showed significant improvement all over India, resulting in a positive impact on human health *(Lokhandwala and Gautam, 2020*). Emission of Green House Gases (GHG) per day was also found to reduce by 50%.

Many factors such as reduction of dumping of waste by industries into the river, absence of bathing and performance of religious activities on its banks, lower water demand for irrigation etc., during the lockdown improved the quality of water of all the major rivers in India. Even the highly polluted Buddha nullah, which discharges effluents from 2423 industrial units into Sutlej River in Punjab showed a drastic improvement. The dissolved oxygen (DO) level of river Ganga improved from 6.5 to 8 ppm and BOD level decreased from 4 ppm to below 3 ppm at Kanpur and Varanasi. Now this has added to improvement by 40-50% in self-cleansing property of river Ganga, and became a better habitat for fish and other aquatic life. Marine ecosystem has also improved considerably during this time. The level of noise pollution had reduced by 30 to 68% in different parts of India during the lockdown period. Eg., residential area of New Delhi reported a reduction of noise from 55 to 30 db *(Arora et al., 2020).* The cleaner air and water and reduced human interference has led to the animals and birds claiming their habitats, even reappearance of many endangered species like Gangatic Dolphins, Malabar civets etc.

In the present phase of unlocking, the situation might have changed already. However, the positive effect of the lockdown on the environment is a big lesson for us, bringing out the obviously inverse relationship of economic and environmental gains in the

current model of development. All the above observations convince us that the damages on the environment are still reversible and give us hope. These observations also emphasize the need of a systematic and planned approach towards sustainable development to take care of both economic and environmental concerns.

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Dr. Aparna B. Gunjal has completed her B.Sc. from Annasaheb Magar Mahavidyalaya, Hadapsar; M.Sc. from Modern College Arts, Commerce and Science College, Ganeshkhind and Ph.D in Environmental Sciences,from Savitribai Phule Pune University, Pune, Maharashtra, India. She is an Assistant Professor in Department of Microbiology at Dr. D.Y. Patil, Arts, Commerce and Science College, Pimpri, Pune, Maharashtra, India. Her research areas of expertise are solid waste management; plant growth promoting rhizobacteria; e-waste management; bioremediation; etc. Aparna has 81 publications to her credit. She has received six Awards for the Best Paper presentations and also received the travel grants. Aparna has also received Pune Municipal Corporation Award for excellent work in Environmental Sciences Research in 2015, The Elsevier Foundation - TWAS Sustainability Visiting Expert Programme" in 2018 and Young Researcher award with Innovative Technology. She has worked on composting aspect as a Senior Researcher Assistant at Hongkong Baptist University, Hongkong. Aparna is Editorial Board Member and Reviewer for many Journals. She is the Director of Asian Agri Food Consultancy Services, Pune, Maharashtra, India.

We Salute these Women Achievers

1. Star named after unrecognized Indian Scientist, Bibha Chowdhuri

https://national.janamtv.com/star-named-after-unrecognized-indian-scientist-bibha-chowdhuri-16354/ 1/3

Unsung brilliant Indian scientist, Bibha Chowdhuri, was honoured by the International Astronomical Union by naming a white yellow dwarf star after her. The star 'Bibha' is 340 light years away in the constellation of Sextans.

The name of an exo-planet of Bibha is called Santamasa. The names were chosen by International Astronomical Union as part of its global contest 'Name Exo Worlds'. Every country had to give a name to a star-exo planet pair.

Bibha Chowdhury, born in Kolkata (1913), was a pioneering Indian particle physicist. D. M. Bose was her mentor (1936-1944). She discovered the pi-meson, a subatomic particle, in Darjeeling before the independence of India. Though the results were published in 'Nature' journal (1943), Bibha Chowdhury was never recognized for her work. Some believe that she was supposed to get the Nobel Prize in Physics. Cecil Frank Powell, a British physicist, discovered the same subatomic particle using the same method that Bibha Chowdhury used and went on to win the Nobel Prize in 1950. However, he acknowledged the work of Bibha Chowdhury and D. M. Bose. Later (1945-1949) Chowdhuri joined the laboratory of Patrick Blackett for her doctoral studies at Manchester University. She was once interviewed by 'Manchester Evening News' which wrote, "It is a tragedy that we have so few women physicists today."

Bibha Chowdhuri returned to India and worked at the Tata Institute of Fundamental Research (1949-1957). She joined the Physical Research Laboratory of the Indian government and was involved in the Kolar Gold Fields experiments (1957-1960). She then worked at the Saha Institute of Nuclear Physics and continued her research until her death in 1991. This is the story of the great Indian woman scientist who did not get recognition for the groundbreaking pioneering works she had done. Her life is described in a book 'A Jewel Unearthed: Bibha Chowdhury'. The book has brought to life the stellar story of a great scientist who was almost lost from the pages of history. Hopefully, Bibha's brilliance, her commitment to science and her simplicity will continue to inspire the countless girls who want to excel in Science.

The naming of a star in her name is the least we could do to honour the genius of Bibha Chowdhury. She shines in the sky like the Dhruva Star.

2. Lt Gen Madhuri Kanitkar – An Inspiration For Women

https://www.defencedirecteducation.com/meet-lt-gen-madhuri-kanitkar-an-inspiration-for-women/

The achievements of Lt Gen Madhuri Kanitkar should inspire every women to achieve their respective goals. Major General Madhuri Kanitkar was elevated to the rank of Lieutenant-General on 29th August, 2020. Lt Gen Kanitkar took charge as Deputy Chief, Integrated Defense Staff (DCIDS), Medical (under the Chief of Defense Staff) in New Delhi. She is the third woman in the country and first pediatrician from the armed forces who will now wear this rank. Lt Gen Kanitkar and her husband Lt Gen Rajiv, will be the first couple in the armed forces to reach this rank. She has served in the armed forces for 37 years. Lt. General Kanitkar said, "India's armed forces is a fair, transparent, respected organization and safe for a woman where she is given opportunities to grow. If there is one message I would like to share, it is to enjoy everyday in uniform with childlike enthusiasm and challenge yourself to achieve the impossible. Never give up, just give back! To every woman in uniform, I can say 'half the world is yours to take, but the full is yours to give'. So, always give your best." Three-star officers hold the rank of Vice Admiral, Lieutenant General and Air Marshal in the Air Force. Lt Gen Punita Arora was the first woman in the country to don the second-highest rank of Lieutenant General in the armed forces. Padmavathy Bandopadhyay is the first woman Air Marshal of the Indian Air Force and the second woman in the armed forces to be promoted to the three-star rank.

A topper at AFMC and winner of the presidential gold medal for the best outgoing student, Kanitkar completed her post-graduation in pediatrics and training in pediatric nephrology at AIIMS. Kanitkar is also a member of the Prime Minister's scientific and technical advisory board. The first trained pediatric nephrologist of the armed forces, Kanitkar, who single-handedly set up units to monitor kidney ailments in children in Pune and Delhi, had returned to her alma mater, AFMC, as its first woman dean in 2017.

3. In Covid year, 'unsung heroine of DNA' Rosalind Franklin needs to be remembered

https://indianexpress.com/article/explained/in-covid-year-why-unsung-heroine-of-dna-rosalind-franklin-needs-to-be-remembered-for-more-65218…

25th July, 2020 is Rosalind Franklin's 100th birth anniversary. Since her death at age 37 in 1958, the British scientist Rosalind Franklin has been remembered mostly as the "wronged heroine of DNA". And as a victim of male prejudice, deprived of the Nobel Prize that went instead to three men who had relied on her work to construct the double-helix structure of DNA.

In recent years, science historians and commentators have stressed all the other achievements she needs to be remembered for. Especially in 2020, when her birth

centenary coincides with the Covid-19 pandemic, Franklin is to be remembered . as one of the leading virologists of her time.

In 1952, Raymond Gosling, a graduate student at King's College London, took a historic X-ray photograph under Franklin's supervision. Photo 51, as it is called, demonstrated the now-familiar, double-helix structure of DNA.
Four years after Franklin died of ovarian cancer, the 1962 Nobel Prize for Medicine went to James Watson, Francis Crick and Maurice Wilkins for their work on the structure of DNA.

Wilkins was Franklin's colleague at King's College. He had shown Photo 51 to Watson, then at Cambridge, without Franklin's knowledge. Her precise measurements, too, had reached Watson and Crick through "irregular routes", Franklin's biographer Brenda Maddox, now deceased, wrote in an article for Nature in 2003. Watson and Crick used the knowledge gained from Photo 51, Franklin' s unpublished notes, and their own intuition to construct the double-helix structure of DNA. Wilkins improved on their model over the years, leading to the three sharing the Nobel.

"During her short life, very few people outside science had heard of Rosalind Franklin. But since her death, she has become a legend. She is particularly famous for her work on the double helix structure of DNA, but she has also become a potent symbol of male prejudice," science historian Patricia Fara of Clare College, University of Cambridge, told The Indian Express by email.

"Surely she deserves to be remembered differently?" Fara referred to the inscription on her grave: 'Scientist: her work on viruses was of lasting benefit to mankind…'"The world is currently gripped in a pandemic, and her pioneering research in virology provided a crucial early step in the search for cures, vaccinations and tests. When she died, Franklin was a world leader in the field," Fara said. "During the Second World War, she carried out research into coal and graphite that proved important for gas-masks, the PPE of that time."

From 1953 until her death, she worked with John Desmond Bernal at Birkbeck College, heading a team that analysed the structure of the tobacco mosaic virus. After mapping that virus, she went on to investigate polio. "It is because of Franklin, her collaborators and successors, that today's researchers are able to use tools such as DNA sequencing and X-ray crystallography to investigate viruses such as SARS-CoV-2," Nature wrote in an editorial this week.

Fara described Franklin as a professional career scientist, whose aim was to increase knowledge, not score points off rivals. "Rosalind Franklin repeatedly fought to establish equality with men, but her top priority was academic success."

4. RSC Awards 2020 for Indian Women

(i) Dr. Radha Boya

https://www.rsc.org/awards-funding/awards/2020-winners/dr-radha-boya/

Dr. Radha Boya of University of Manchester is the winner of 2020 Marlow Award (one of the RSC Awards) for contributions to creating Angstrom-scale atomically smooth capillaries from two-dimensional materials and unravelling the properties of fluids under atomic-scale confinement.

Tiny pipes or capillaries which can allow flow of fluids through them have interesting mass transport properties when the size of the pipe itself approaches the molecular size. When matter is confined in such ultra-thin pipes, their properties and transport are expected to be quite different from those more familiar in the macroscopic world. Dr Boya's research group made two-dimensional slit-like capillaries which are atomic-scale rectangular pipes, by assembling one atom thin sheets in a layer-by-layer fashion. Water moves fast (velocity ~ 1 metre/second) through these capillaries whereas ions such as Na and Cl are not able to pass through. The group explored this unique size selective filtration capability of Å-scale capillaries to investigate fundamental mechanisms of steric exclusion of molecules and ions. Their experiments improved the understanding of molecular transport at the atomic scale and suggested further ways to replicate the mass transport functions of the remarkable machinery of living cells, for example protein channels where the water and ion transport happen at a single molecule level.

Dr Radha Boya is a Royal Society University Research Fellow and Kathleen Ollerenshaw Fellow in the Department of Physics & Astronomy and National Graphene Institute at the University of Manchester. Her primary research interest relates to ultimately narrow capillaries made by effectively removing a single atomic plane from a bulk layered crystal. These capillaries with atomically smooth walls are only several angstroms (Å) tall and can transport molecules one layer at a time.

After completing her PhD in India, Dr Boya secured a series of highly prestigious international research fellowships. She was awarded with Indo-US pre- and postdoctoral fellowships in 2012 to work at Northwestern University, USA. In 2014, Radha relocated to the UK with Marie Skłodowska Curie Fellowship held at the University of Manchester. She was awarded a Leverhulme early career fellowship in 2016, a Dame Kathleen Ollerenshaw fellowship from the University of Manchester in 2017, and a Royal Society University Research fellowship in 2018. In 2019, Dr Boya secured an ERC starting grant to work on confinement induced molecular structure dynamics and molecular separation. She has published 46 research papers, including some of them in Nature and Science journals. She was named as a UNESCO L'Oréal-women in science UK Fellow, International Rising Talent as well as being recognized as an inventor in a global list of "Innovators under 35" by MIT Technology Review. Dr Boya established her research group at the University of Manchester in 2016 which now consists of five PhD students and four post-doctoral researchers. Her group

focuses on investigating the mass transport of ions, gases and water through angstrom-scale confined channels.

(ii) Professor Madhavi Krishnan

https://www.rsc.org/awards-funding/awards/2020-winners/professor-madhavi-krishnan/

Professor Madhavi Krishnan of University of Oxford is the winner of 2020 Corday-Morgan Prize (one of the RSC Awards) for the invention of a 'field free' trap for confining and manipulating a single colloidal particle or molecule, enabling accurate and precise measurements of molecular charge in aqueous solution.

A microscopic bit of matter in solution is in continuous motion. Pummeled at random by the solvent, it engages in a randomly directed walk that will eventually take it far away from where it was first observed. At the nanoscale, even gravity is too weak to influence the trajectory of the object, however, placing surfaces in the vicinity puts new forces into play. By appropriately tailoring the geometry of the walls, Professor Krishnan's research group is able to harness these intrinsic object–wall forces and maneuver their entity of interest into a desired spatial location and orientation in a fluid. Once there, the object levitates stably for long periods. The scientists in her group are pioneering the use of the "electrostatic fluidic trap" in order to realise new experiments in the spatial control, manipulation, and measurement of nanoscale matter in solution. Their primary focus is on biological molecules such as proteins and DNA. Using this new approach to trapping molecules they developed a way to measure the electrical charge of a single biomolecule in solution with high precision. Not only does this new measurement technique open up hitherto unforeseen avenues in fundamental science, but the technological implications for society are significant. The electrostatic fluidic trap provides a new technological platform for highly sensitive and precise measurements of small changes in biomolecular properties that could be central to the diagnosis and detection of disease states and may therefore make a significant contribution to diagnostic and biomedical detection approaches of the future.

Professor Madhavi Krishnan is currently Associate Professor of Physical Chemistry at the University of Oxford. She completed her undergraduate work at Anna University, Madras, India followed by a PhD at the University of Michigan at Ann Arbor. Supported by Alexander von Humboldt and Marie Curie Fellowships she carried out postdoctoral work in single molecule biophysics and nano-optics at Technical University Dresden and ETH Zurich respectively. In 2012, following a brief stint as a Visiting Scholar at Harvard School of Engineering and Applied Sciences she was appointed Assistant Professor in Physical Chemistry at the University of Zurich and received a Professorship of the Swiss National Science Foundation. She was awarded the 2016 Nernst- Haber-Bodenstein prize of the German Bunsen Society for Physical Chemistry for her research which examines molecular electrostatics in the fluid phase, including both experiment and theory. At Oxford since 2018, Professor Krishnan leads a multi-disciplinary research team at the Physical and Theoretical Chemistry Laboratory supported by an ERC Consolidator Grant. At various stages, her research has

received broad press coverage including in leading national dailies like NRC Handelsblad (Netherlands) and Neue Zuercher Zeitung (Switzerland).

5. Girl cycles 1200 kms amidst lockdown to bring her father home from Gurgaon to Bihar

https://www.newindianexpress.com/nation/2020/may/20/covid-19-lockdown-15-year-old-girl-cycles-1200-kms-to-bring-father-home-from-gurugram-to-bihar-2145798.html

When there is a will, there is a way. Proving it true once again, 15-year-old Jyoti Kumari of Darbhanga brought her ailing father by bicycle from Gurgaon in Haryana to Darbhanga in Bihar on 19th May, 2020. When her father found no way to return to Bihar amid the lockdown after being rendered jobless, eighth-grade pass Jyoti Kumari gave him hope him saying: "Chinta na kare mai hoon na"(Don't worry, I'm here)" and took him on a bicycle. Jyoti asked her father sit on the rear side carrier of bicycle and started peddling it with indomitable determination. She said, "I remembered God just for a few seconds and set off with my ailing father to return to our ghar (home) riding on a bicycle." She covered a thousand kilometers from Gurugram in Haryana in seven days and reached Darbhanga. She counted that around 100 to 150 kilometers were covered by bicycle with her father in a day. "Wherever I felt exhausted, stopped, washed the face with water being carried in a plastic bottle and gave some biscuits and water to father and again set off towards destination - Darbhanga," she said. She recalled that trust of her father reposed in her during journey by a bicycle that kept her determined and going on throughout the way. When there was too much fatigue, she used to sit on the road and get some rest. Braving against all odds en route, Jyoti brought her father to his home district without losing courage. She recalled with tears in her eyes that she had to remain hungry for two days but fed her father with whatever she had carried with her. "In many places, some people moved by our miserable condition or seeing me riding a bicycle with an old age man, came forward and helped with water and some food," she said, adding that her father Mohan Paswan is a source of strength to her. She has been quarantined with her father and become popular as "Shravan Kumari" of Darbhanga. Upon knowing about her tale of grit and gut, Darbhanga DM Dr. Tyagarajan SM, sent an official to the house of Jyoti Kumari at Siruhulia and assured to provide all help. Jyoti aspires to study further and the Darbhanga district administration has assured her to help in further study. "At this time, these families are currently getting some government benefits, and after this, all government facilities will be provided according to the need," the DM said. Meanwhile, she has been felicitated by a local social organization namely Dr Prabhaat Foundation with a title of "Virangana Mithila Ke".

6. Padma Awardee Subhasini Mistry

She is Subhasini Mistry, who worked as a maid, a vegetable vendor, did menial jobs to build 'Humanity Hospital', which serve the poor people of Bengal – with no refusal policy. 71 year old Subhasini Mistry toiled for years as a housemaid, a manual labourer and a vegetable-seller. All while long, she carried just one dream - to build

a hospital for the poor because she could not afford proper medical treatment for her husband and became a widow at 23. Now 48 years down the line, Humanity Hospital, in Hanspukur village near Kolkata, stands tall and proud, serving the poor free of cost since 1996, a testimony to a single woman's grit, determination and never-say-die spirit against all possible odds. She was awarded the Padma Shri by the President of India this year. She came to receive her award in slippers.

Dr. Bibha Chowdhuri

Lt. Gen. Madhuri Kanitkar

Dr. Rosalind Franklin

Dr. Radha Boya

Prof. Madhavi Krishnan

Ms. Jyoti Kumari, who cycled 1200 km to take her ailing father to their hometown during lockdown

Padma Awardee Ms. Subhasini Mistry

Obituary

Dr. (Mrs.) Aban M Samuel

(23-08-1940 - 02-05-2020)

Dr Aban Samuel, former Director of Bio- Medical Group, BARC, Mumbai passed away on 2nd May, 2020. She leaves behind her husband Dr. M. R. Samuel and her two sons. She was diagnosed with cancer of the Buccal Mucosa in January 2020.

"Dr. Mrs. Samuel was affectionately and respectfully referred to as "Madam" among most of the national Nuclear Medicine fraternity. She was an eminent medical professional, a paediatrician, a keen researcher, expert teacher and a kind manager of programs and personnel and above all a warm, friendly colleague. She guided several students to acquire PhD (Applied Biology) and DNB (NM). She was goal-oriented and did not allow her personal feelings or inter-personal differences to come in the way of the department's objectives":-- as described by her colleagues Dr. Venkatesh Rangarajan, Dr. N. Ramamoorthy, Dr. MGR Rajan, Dr. BA Krishna. in the Memorium which appeared in Indian Journal of Nuclear Medicine, 2020 Jul-Sep; 35(3): 191–193..

Dr Samuel was the first woman Group Director in DAE. She was earlier Head of Radiation Medicine Centre, BARC,Mumbai. Although she was paediatrician, she took great interest in laboratory based research. She was an expert in Nuclear Medicine and her research interests were in Nuclear medicine, PET-CT Scan, Cyclotron targetry, Radiopharmaceuticals etc. Dr. Samuel initiated the invitro Nuclear Medicine program in RMC in 1967 and established Radio immunoassays to measure growth hormone and other metabolically important proteins.

The 1970s and 80s Dr. Samuel encouraged her junior colleagues in the Electronics Division of BARC to develop the required equipment for radio immunoassays at RMC. By 1995, RMC became a centre for learning of RIA technique which was one of the pillars of the peaceful uses of nuclear energy for healthcare.

Dr. Samuel, after a few years of research in in vitro nuclear medicine, concentrated on the development of paediatric nuclear medicine at RMC. In the early 1990s, she wrote a book on thyroid cancer which provides information about the thousand cases which were treated at RMC with radio iodine.

Dr. Samuel played a crucial role in bringing the first medical cyclotron (MC) and PET facility in our country. The first MC in the private sector came up with her guidance in (Navi) Mumbai. Today there are more than 15 such facilities in different regions of the country.

She was Chairperson of various committees including Womens' Cell, BARC. She encouraged all her women colleagues whole heartedly and helped in marketing irradiated spices through Annapurna Mahila Mandal. As Chairperson of Women's cell, she supported Dr. Sudha Rao and Dr Shobha Patkar to start Kilbil, a Day Care Center in Anushakti Nagar. After retirement, she was a consultant nuclear physician. She was IWSA's life member and encouraged IWSA Members to start "Rugnasahayak course", which is the need of the times for senior citizens of the country.

2009 **Ornamental Tree of IWSA Kamini in bloom.** 2020

Speakers at the Learning Garden Member Enrichment Program. IWSA HQ

Ms. Madhu Pahwa

Dr. Sushma Lahiri

Ms. Vijaya Chakravarty

Ms. Kalpana Sathe

Dr. Paramjit Anthappan

Dr. Mahtab Bamji

Dr. Ratna Kollur

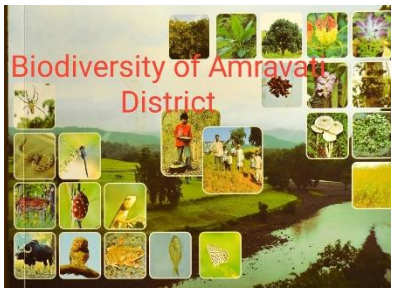
Dr. Rita Mukhopadhyay

Ms. Manik Gade

Ms. Priyanka Abdar

Dr. Hameeda Bee

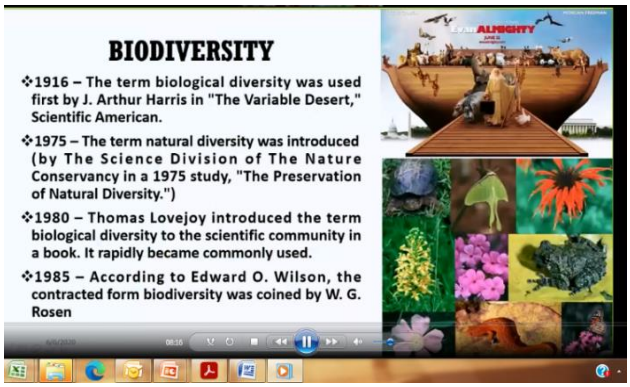
Activities from other Branches

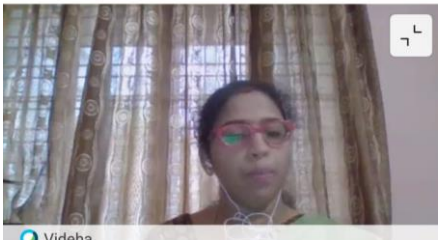


Slide presented by Amravati Branch During Environment Day Webinar at IWSA HQ on 5th June 2020

Anouncement of Slogan Competition on "Our Solutions are in Nature" by Amravati Branch in May 2020

Anouncement of Slogan Competition on "Destruction of Ecosystem and the climate crisis is hurting humanity, with Covid-19 a 'clear warning shot" by Baroda Branch in June 2020





Dr. Sangeetha Menon speaking on Role of Microorganisms in Biodiversity Conservation and Sustainable Development on 6th June, 2020, Bengaluru Branch

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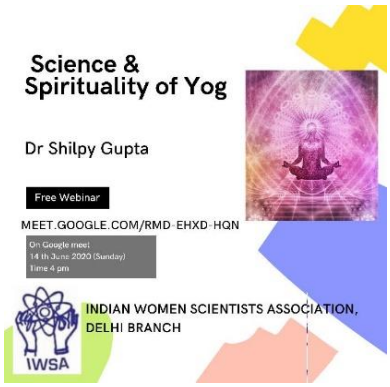
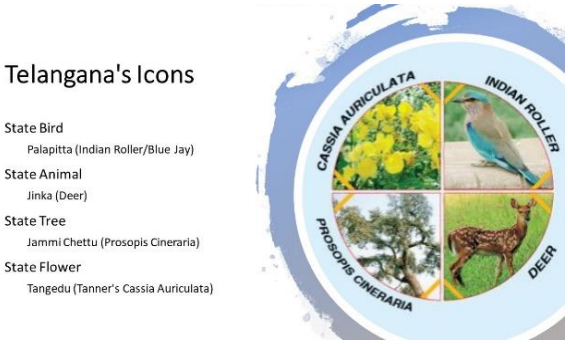
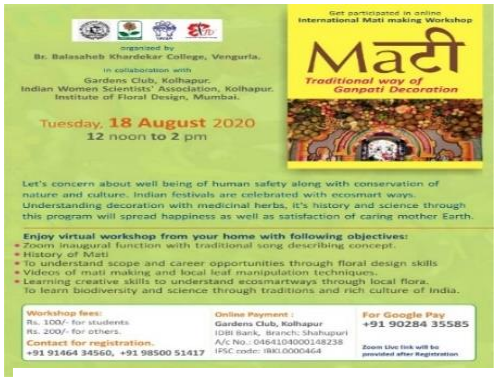


Webinar on 'Science and Spirituality of Yoga ' by Dr Shilpy Gupta, 14th June, 2020, Delhi Branch



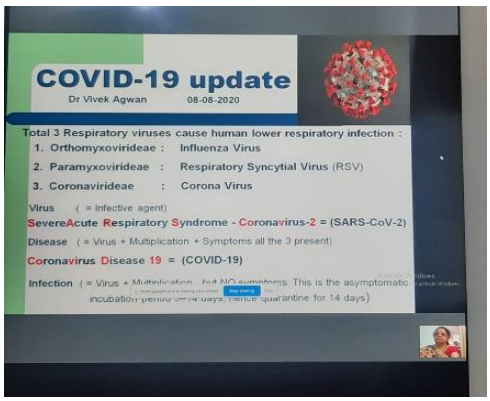
Slide presented by Hyderabad Branch During Environment Day Webinar at IWSA HQ on 5th June 2020

Celebration of World Mangrove Day on 26th July, 2020, Kolhapur Branch



Online International Mati Making workshop on 18th August, 2020, Kolhapur Branch

"World Environment Day" (Twin Yoga Session) on 21st June 2020, Nagpur Branch



Online talk on "COVID 19 Updates" on 8th August 2020 by Dr. Vivek Agwan, Nagpur Branch

BOOK POST

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"My wife doesn't do anything; she is just at home," a father of a student from Kerala, India, always used to introduce his wife to others like this. But this boy always saw his mother busy with so much house work, so he painted her while doing so much work and titled it, 'My Mother and Mothers in the Neighbourhood'. The school teacher was so amazed to see this painting done by a class 9 student, Anujath Vinayal, from Thrissur, that he sent it to the Government office. In this painting he has depicted the unpaid work of women working at home. The painting has been selected as the cover of the Gender Budget document of the government of Kerala for the year 2020-2021

To

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