

Conference Report

Report of the Two-Day National Seminar on “Role of Women Scientists in Developing Science and Society in India” Held on January 13-14 2020

On behalf of the Institute of Science Education and Culture (ISEC), Prof. Santanu Das and Dr. Bandana Barman participated in the Two-Day National Seminar on “**Role of Women Scientists in Developing Science and Society in India**” held on January 13-14 2020 organized by The Asiatic Society, Kolkata in collaboration with All India People’s Science Network (AIPSN).

Dr. Satyabrata Chakrabarti, the General Secretary of The Asiatic Society delivered the Welcome Address. He briefly stated about the motto behind setting up The Asiatic Society and outlined the activities of this heritage institution. He raised a question of not having a good number of women in science, especially in physics. His lecture topic was “Women in Physics and Astronomy: Pre and Post Independent India”. He told that there had been very well known women scientists, namely Lise Meitner, Rosalind Franklin and Joclyn Bell. However, in India, only the name of Bibha Chowdhury cropped up nearly about eighty years after her work had been published. In early 1940’s, only known elementary particles were electron, positron, neutron and muon to physics community. The pioneering experimental work in Kolar Gold Mines done by Bibha Choudhury and Debendra Mohan Bose had not much been revealed then, but that work later led to the discovery of pion. The work of Bibha Chowdhury and D M Bose was recorded by C F Powell who was awarded Nobel prize in 1950. In pre-independence India, in spite of having lack of facilities, Bibha Chowdhury chose Physics to work on that was

a challenging task. Unfortunately, she is still not much known in India in spite of having a very good association with Homi Bhaba, Vikram Sarabhai and her thesis guide, Nobel Laureate P M S Blackett. He also mentioned that Professor Suprakash C Roy had written the biography of Bibha Chowdhury. He lamented that the social gender discrepancy between men and women is still there, but a ray of hope is there also that so many women are doing well in teaching as well as in different scientific research works. In his lecture, Dr. Satyabrata Chakrabarty said that Royal Society of London had elected an Indian woman as a fellow and Indian National Science Academy had elected a woman scientist as the President of the Academy.

Dr. Arunabha Misra, Coordinator, The Asiatic Society and the Convener of the seminar introduced the theme of the Seminar. He told that in ancient ages, women, in general, had been discouraged by the society to have proper education. Women scientists were often thought of just attendants of male scientists. Some of them had to strive of several difficulties to secure their place and become role model for all women scientists. The Noble Laurite, Marie Curie, did not have any designation either of a teacher/research scholar in any institute. The great scientist, Lisa Meitner, did not have permission to conduct research in her own country. Her speech on Cosmic Physics in Berlin was advertised as Cosmetic Physics only because of her womanship. The female Paleontologist, Mary Leaky, was overshadowed by Luis Leaky for the same reason.

Clara Immerwarh was the first woman doctorate from a German University. Laura Katarina Bassi was the first female professor in a European University in 1732, but she got the job at the age of 65 years. There is a long list of women scientists who were victimized due to their womanhood in worldwide. That kind of situation also prevailed in India. Women scientists in India also had faced stiff obstacles; in spite of being a doctor, Anandibai Joshi succumbed to death untimely, while E K Janaki Ammal, the first female D.Sc. in India, had to leave her motherland at the age of twenty two as their male colleagues made her life unbearable. The first Indian female anthropologist, Iravati Karve's contribution did also not come to limelight in spite of carrying out pioneering work. Dr. Misra further mentioned the names of some renowned Indian female academicians who had struggled hard to overcome gender inequality in different fields of science and education during the British raj. After independence, the infrastructure in science and technology education had been improved with several scientific, technical and medical institutes getting upgraded and the gender inequality became lower. Dr. Misra also mentioned that the Research and Development budget in India was a mere 0.7% of the GDP in 2014 while China had it in 1996. Not only China, but most of the developed countries had substantially more spending in R & D than India. The Education scenario in India was also reported to be suffering from less budget allocation w.r.t. percentage of GDP to provide proper quality of school education for both girl and boy students. This, in turn, causes children for not getting proper opportunity to acquire scientific temperament. Dr. Misra also mentioned Venkataraman Ramakrishnan's quote on scientific rationalism that India had chosen the path of developing itself like a half hearted developed country. He finally acknowledged The Asiatic Society and AIPSN for organizing this two-day national seminar on women empowerment.

Dr. P. Rajamanickam, the General Secretary of All India People's Science Network (AIPSN), stated that he felt proud for being associated with a heritage and pioneering institution, The Asiatic Society that had started its journey way

back in 1784 in the colonial period to promote science education in India. But till 1829, it was exclusively for the British only. The Asiatic Society was the sole organization for research in Asia to contribute in several fields of science so that this organization became the mother institute of several premier scientific institutions in India. He told that AIPSN started its journey in 1988 with the success of Bharat Jan Vigyan Jatha. This was started with 18 organizations, but now it has above 40 organizations involved in campaigning for literacy as well as doing some works on health, science and technology, environment, women empowerment, art and education, etc. in India. He also stated about several activities like workshops, seminars, training, etc. that they used to organize to empower and motivate the members understand historical achievements of scientific developments in India. In colonial India, the caste system had strongly been prevailed over the educational system and Shudras did not get enough scope of education, and women were not allowed to go to school. In 1848, the first school for girls was opened by Jotirao Phule and his wife, Savitribai Phule in India. Afterwards, in 1886, Anandibai Joshee graduated from Women's Medical College at Philadelphia and she was the first Indian woman to obtain a degree in Western medicine. Only in 1915, the proposal of setting up a Women University in India to teach modern science and English was reported.

In the present scenario, the situation is somewhat changed, but still the global average of women education in science and technology is around 28%, reported Dr. Rajamanickam. In spite of all obstacles, some women scientists proved themselves at the top of the fame like, Janaki Amma, Debala Mitra, Iravati Karve, Asima Chatterjee, Bibha Choudhury, Rajeswari Chatterjee and Anna Mani. Dr. Kadambini Ganguly was one of the first women graduating in medical science. She was also at the forefront of social movements like Bengal Partition in 1906 and female coal miners' protest in Eastern India. She also supported Satyagraha and mobilized people to raise funds for Satyagraha members. He expected this national seminar to discuss about the valuable contributions of the notable woman scientists and activists in pre- and post-independent India.

Prof. Rajeswari Raina, Professor, Department of International Relations and Governance Studies, Siva Nadar University, U.P. delivered the Keynote Address. She told that ladies had been participating in several scientific activities these days. Though a small number of women are getting into the expertise position, but the relationship between knowledge and power is centrally changing. She mentioned about female foeticide, dowry death or sexual harassment that had still been prevalent in India. She stressed on public-funded sustainable education to all. Prof. Raina mentioned about the availability of several scholarships available for women in different fields of study. Researchers had been involved in doing research on climate change, environmental aspects, economic and social needs as the mark of the 21st century, "March for Science". She hoped that people's science movement should step into stretching and reforming formal sciences to take women in science forward thereby transforming science-society relationships. She also stressed on developing the ability of a person in understanding 'false science' in the guise of science.

Prof. Isha Mahammad, President of The Asiatic Society, delivered the presidential address. Dr. Sujit Kumar Das, the Treasurer of The Asiatic Society, delivered the Vote of Thanks in which he welcomed all the dignitaries, and sincerely thanked all concerned being associated with this seminar.

Academic Session 1 was on "Women Endeavors in Medical Education in India with Special Reference to Anandibai Joshee & Kadambini Ganguly". The Chairperson was Dr. Anita Rampal, Educationist, Delhi University. The first speaker was Prof. Simonti Sarkar from Bose Institute, Kolkata. Her topic was, "Anandibai Josee, the Torch Bearer Woman in Medical Education in India". Anandibai Josee was born in a conservative Marathi family, but her determination overcame all obstacles and difficulties and established herself as a doctor more than 130 years ago. Every woman should learn from Anandibai that "fight for your choice and existence". The second speaker was Dr. Moumita Chatterjee from Medica Super Speciality Hospital, Kolkata. Her lecture topic was, "Medical Education in colonial Bengal,

Social Stigma and Role Played by Kadambini Ganguly". She gave a speech on Kadambini Ganguli and her struggle to establish herself as a doctor. He told that Western treatment was started in 16th century in India. During that period, women were considered for nursing job only but Kadambini Ganguli broke that scenario. Dr. Chatterjee told the audience that discrepancy between male and female in medical education is still going on. At the end of this session, there was a good interaction between the audience, speakers and the Chairperson.

Academic Session 2 started with Prof. Hemanta Kumar Majumder, Senior Scientist, NASI, Platinum Jubilee Fellow, as the Chairperson. The theme of this session was "Women in Biology: Past and Present". The first speaker was Prof. Chitra Mandal, IICB, Kolkata and the topic was "Pre-Independence Endeavors in Biology and Contribution of Janaki Ammal." She told about ancient Indian medicine practiced in 600 BC. The father of medicine was Acharya Charaka and Charaksamhita is the oldest book in medical treatment. She stated that Lilavati had been the first Indian lady Mathematician, and Lilavati's daughters had also been women scientists. She also mentioned the other renowned women scientists of India and outside India. Janaki Ammal was a botanist and did lot of works in Botanical sciences in the area of polyploidy. She was awarded with Padmasree by Indian Government. The second speaker was Dr. Chandana Chakrabarty, formerly of VVMB, Hyderabad. Her lecture topic was "Role of Women Scientists in Post-Independence Biological Research". In her Lecture, she suggested about creating a space for women in scientific institutions to build an equitable institutional culture to include both men and women. After the session, a great interaction between audiences, speakers and chairperson was there.

Theme of Academic Session 3 was "Women in Anthropology, Sociology and Archeology: Special Mention, Works of Debala Mitra and Iravati Karve". The Chairperson was Prof. Swapan Kumar Pramanik, Ex-Vice Chancellor, Vidyasagar University. The first speaker of the session was Dr. Goutam Sengupta, Former Director General, ASI, Kolkata. He spoke on

“Women in Archaeology with Special Reference to Debala Mitra”. He narrated full biography of Debala Mitra including her childhood, education in Calcutta University and abroad viz. France and Comodia. She created history in male dominated India by holding the highest position, Director General of the Archaeological Survey of India. She explored and excavated several Buddhist sites at Ratnagiri. The second speaker of this session was Ms. Priyadarshini Karve, Pune. Her topic was “Life and Works of Iravati Karve”. Ms. Karve is the granddaughter of Iravati Karve. Dr. Iravati Karve was an anthropologist, sociologist, educationist and writer. Ms. Priyadarshini enlightened the audience about Dr. Iravati’s methods and knowledge of her work. There was an interactive discussion between both the speakers with the audience and the Chairperson.

In Day 2, deliberations on “Women in Physics and Astronomy: Pre and Post Independence India” were made in Academic Session 4 with the Chairperson, Dr. Sabyasachi Chatterjee, IAP, Bangalore. The first speaker was Dr. Suprakash C. Ray, a writer based in Kolkata. The topic of the lecture was “Bibha Choudhuri and her Role in Pre-Independence Indian Research”. He told that Bibha Choudhuri did pioneering works in Cosmic Ray and mesons available in it, but was a victim of gender discrepancy by Sir C V Raman. This Indian physicist, Bibha Choudhuri worked on particle physics and cosmic rays in Bose Institute, Saha Institute of Nuclear Physics and also in different eminent Institutes abroad. She joined TIFR as the 1st woman Research Scientist as invited by Homi J Bhaba. Bibha received due recognition only after 30 years of her death. A distant star was named ‘Bibha’ after her. The second speaker of this session was Prof. Bindu A. Bambah of the University of Hyderabad. Title of the lecture was “Women in Physics in Post-Independent India”. Prof. Bambah told that in the post-independence era, men and women shared the same space, but gender inequality often held back the growth of individuals. Less number of women are graduating in physics these days rather than biological sciences. She opined the important factor which would help women to stay in physics would be to aim for excellence. Women should be more assertive and courageous

to choose physics and astronomy for their career. She also stated that the work reported by Prof. Bibha Choudhuri had been utilized by many scientists for getting higher echelon in research in physics. There was a good interactive session after these two lectures.

Academic Session 5 was on “Women in Chemical Science with a Special Mention to Asima Chatterjee”. The Chairperson was Dr. Tapan Kumar Das, former DPI, Department of Higher Education, Govt. of West Bengal. The first speaker was Prof. Julie Banerjee, formerly with Calcutta University. She delivered her lecture on “Asima Chatterjee and Chemical Research in India”. Prof. Julie Banerjee is the daughter of Prof. Asima Chatterjee. She told about several research works in organic chemistry that were done by her mother, Prof. Asima Chatterjee. She told that now women are choosing chemical science for their higher study, but being a woman of that period, it was not easy because of gender discrepancy. Asima Chatterjee set up an Ayush Hospital with the support of Govt. of West Bengal and Govt. of India. She breathed her last in her laboratory as she had wished quite often. Prof. Shyamal Chakrabarty, also of Calcutta University, delivered the second lecture of the session. The title of his lecture was “Role of Darshan Ranganathan and Other Indian Women who Pioneered Post-Independence Indian Chemical Research”. Darshan Ranganathan, the 1st FRS from India and an organic chemist, was 25 years younger than Prof. Asima Chatterjee. Dr. Ranganathan went to London for post-doctoral research work and after returning from there, she joined IIT Kharagpur. She published 24 research papers and book on organic chemistry and Bioorganic chemistry such as cycles of urea, peptides, etc. June 04 was her day of birth as well as death. There was an interactive session after these two deliberations.

Academic Session 6 started with the theme “Women in Engineering and Mathematics: Special Reference Rajeswari Chatterjee”. The Chairperson was Prof. Pradip Kumar Majumder of Asiatic Society. The first speaker was Prof. Nandini Mukherjee of Jadavpur University. Her lecture was on the first woman in IISc faculty, Engineer Rajeswari Chatterjee. She told that

Engineer Rajeswari did M.Sc. in mathematics. Then she joined IISc Bangalore as a Research Student in Electrical Technology, but Sir C V Raman refused her to work under him. Then she went abroad and did Ph.D. in Electrical Engineering. After returning India, she joined IISc Bangalore as a member of faculty. She mentioned that while first engineering degree course started in 1847, in 1943 only, the first woman, A. Lalitha, became an electrical engineer, with two other girls. And in 1951, Ila Majumdar became the 1st female mechanical engineer from B.E College, Shibpur, Howrah. After this lecture, Ms. Bahata Angsumali, a Software professional of Bengaluru delivered the second lecture of the session. The title of her lecture was “Recent Studies on Indus Valley Inscriptions”. She told about different multi-disciplinary approaches to understand the semantic role of Indus Valley inscriptions. This is the most enigmatic aspect of expansive Bronze Age civilization (2600 BC to 1900 BC). The study of inscriptions, i.e. epigraphy, is a very demanding research area to understand ancient languages, palaeography, history, contextual analysis etc. After the lectures, there was a great interactive session.

The theme of Academic Session 7 was “Environment and the Role of Women Scientists with Special Reference to Anna Mani”. The Chairperson was Prof. Chitra Mondal, IICB, Kolkata. The first speaker was Ms. Tejal Kanitkar, Tata Institute of Social Science, Mumbai. The title of her lecture was “Environment Development and Women”. She commented that women are usually better towards tackling the adversities of nature than their male counterparts. The second speaker of this session was Mr. T Gangadharan, former President, KSSP, Kerala, and he deliberated on “Pivotal Role of Anna Mani in Developing Indian Environmental and Atmospheric research”. He mentioned Ms. Anna Modayil Mani to be one unforgettable Indian scientist for her contributions to Indian meteorological Instrumentation. She is remembered as an innovative programmer

towards modernization, standardization, self-reliance in meteorological instrumentation as a scientist, an institution builder, administrator and also a good team leader. She is well known for her works on ozone study, survey of solar radiation and wind energy and planning for setting up calibration facilities.

At the end, the Plenary Session started in which Dr. Arunabha Misra was the Coordinator and Dr. Sujit Kumar Das was in the Chair. Eminent speakers of this session were Dr. Anita Rampal, Faculty of Education, Delhi University, Ms. Geeta Mahashabde of Nabanirmiti Learning Foundation, Pune and Dr. T V Venkateswaran, Senior Scientist, Vigyan Prasar. Dr. Anita Rampal discussed on “Problems and Prospects of Women in Present Day Science Education and Research Arena”. She told that feminist perspectives had sought to restructure science so that it could be made more egalitarian, inclusive, contextual, collaborative, non-competitive. Then Ms. Geeta Mahashabde discussed on “Better Science Education for Younger: Experience of NLF”. She told that good quality science education should be considered a legal right of every Indian youngster as a consequence of the Right to Education Act, 2009. Dr. T V Venkateswaran, Senior Scientist, Vigyan Prasar, discussed on “Women in Science: Role of Science Communicators”. He told that in some particular science disciplines, still women do not participate. As a solution, a science communicator can suggest a way-out to address this problem.

At the end the organizing committee thanked all speakers, audiences and all the members associated with this two-day national seminar. Really the seminar was a tribute to all the women scientists of India.

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