HISTORICIZING INDIAN SCIENCE CONGRESS ASSOCIATION AND INTERNATIONAL RELATIONS IN SCIENCE

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Abstract

There is limited research on scientific institutions, particularly scientific societies, professional associations and academies of science, etc. in the existing literature of the history of science and technology, science technology studies (STS) and science diplomacy in particular. Recent studies on the Royal Society of London, American Association for the Advancement of Science (AAAS), and French Academy of Sciences have highlighted their role in strengthening international relations of/in science and science diplomacy. Their roles in the genesis of the scientific community, creation of scientific societies, advancing science and articulating social relations of science have been studied. However, the role of scientific societies, academies of science in catalyzing international relations in/of science is mostly sidelined. The chapter aims to study the role of academies and associations of science as ambassadors of their countries and as stakeholders in facilitating development networks through science. The social relations of science, particularly, social implications of scientific discoveries and social responsibility of science gained greater importance during 1930s and 1940s, marking growing responsibility of science/scientists towards their role in social well-being, international peace and cooperation. The present chapter explores the Indian Science Congress Association (ISCA), one of the earliest professional associations of science role in shaping international relations in science and science diplomacy. ISCA has played an instrumental role in the emergence of the scientific community in India, institutionalization and professionalization of science including the foundation of the academies of science in India, particularly the National Institute of Sciences in India (now known as Indian National Science Academy). The chapter is based on archival research including ISCA's proceedings and documents, and a biographical study of its members, general and sectional presidents during 1914-1964 to understand scientific networks. The chapter, also, highlights the role of science as a tool for communication and collaboration even during times of difficult relations between countries, with particular reference to India's continued scientific engagement with British institutions and scientists during the peak of India's struggle for Independence from the British rule.

Keywords

Indian Science Congress Association, Professional Science Associations, International Relations of/in Science, Social Responsibility of Science and Science Diplomacy

Introduction

Studies have shown that science academies, professional science associations, and scientific societies have contributed significantly to the shaping of national scientific communities, the advancement of science (Howarth, 1931; Kohlstedt, 1976; MacLeod, 1988), science communication and providing credible information and finding potential solutions to current challenges. The progress of science in the United Kingdom was intimately bound with the growth of learned societies, starting with the Royal Society (Hill, 1944). Recognising the importance of maintaining communication with foreign scientists and staying updated on recent scientific research and technological developments, the Royal Society instituted the post of Foreign Secretary in 1723 (American Association for Advance of Science [AAAS] and The Royal Society, 2010). With the establishment of the *Philosophical Transactions* it played a key role in the diffusion of scientific information and became the *first organ of international scientific communication* (Brofenbrenner, 1928; Hall, 1975). Over time, it increasingly became involved in assisting and advising several government agencies (Gascoigne, 1999).

The British Association for the Advancement of Science (BAAS) aimed to advance science and the scientific profession (Williams, 1961). BAAS has played a significant role in the progress of different specialisms of science and their application for the material well-being of society. Its sections gave shape to corresponding specialised scientific societies in Britain (Howarth, 1931). Similarly, the American Association for the Advancement of Science (AAAS) played an instrumental role in shaping a discernible voluntary scientific community and became the central space for scientific debates by mitigating the geographical and academic isolation among the scientific workforce. The Association fostered the growth of various disciplinary societies, balanced both 'advancement' and 'diffusion' of scientific progress. AAAS's recommendations are paid attention by the State and federal governments. It has also acted as a podium for the announcement of new policies to the public. Profiles of participating members, series of proceedings, public approval and increasing international recognition attest to its success (Kohlstedt, 1976).

The Australia and New Zealand Association for the Advancement of Science (ANZAAS) was the principal national congregation for the promotion of science and its implementation, playing a critical role in the advancement of various sciences and shaping the scientific community and becoming one of the greatest tools for the spread of scientific knowledge. It also engaged with the social, economic and political implications of science and technology, and helped shape and consolidate public attitudes towards uses of technology. Its discussions focused on the use of research for the betterment of the people of Australia and New Zealand. ANZAAS' sessions also reflected its commitment towards the social responsibility of science (MacLeod, 1988).

Additionally, professional associations of science and scientific societies have played a key role in building international networks, international relations in science and science diplomacy. Although the practice of science diplomacy is not new, scientific societies like the Royal Society, London and AAAS have played a key role in evolving and advancing theoretical understanding of science diplomacy. Their seminal report, *New frontiers in*

Science Diplomacy published in 2010 serves as the basis for the understanding of science diplomacy, providing a three-pronged definition of science diplomacy. Through its Science Diplomacy Center and the publication of its Science & Diplomacy, AAAS has been central to developing an intellectual framework and capacity building in science diplomacy. Together with AAAS, The World Academy of Sciences (TWAS) conducts courses and capacity building activities including lectures, workshops and prizes in science diplomacy. In February 2025, AAAS and the Royal Society published an update framework for science diplomacy, titled Science Diplomacy in Era of Disruption' which tries to address evolving challenges in the field of science diplomacy, particularly with growing technological advancements, competition, techno-sovereignty, techno-nationalism, and the influence of non-state actors. These science organizations together have played a significant role in building capacity and disseminating knowledge on science diplomacy, apart from forging international science networks. AAAS has played a key role in fostering US-Cuba cooperation on scientific issues of mutual interest (Fink et al., 2014; Ortiz, 2023).

Further, it has been noted that scientific organizations including academies and scientific councils can further contribute to science diplomacy for tackling future challenges (Gluckman, 2022). The global network of science academies like InterAcademy Partnership (IAP) also works across national boundaries and contributes to global policy debates and advice, and science diplomacy by jointly addressing issues of regional and global importance (Hassan et al., 2015).

Scientific Societies: A Historical Background

The term science diplomacy has gained traction by the turn of the present century, and the concept and theoretical understanding have been advanced recently by several researchers. However, it has been noted that its practice has deep historical roots. At the outset, it is pertinent to understand the growth of scientific societies. The seventeenth century showed significant strides in scientific knowledge and is often viewed as the century that introduced experiment and furthered changes in science (Brofenbrenner, 1928). Apart from individual scientists, several scientific societies sprang up in Italy, England, France, and Germany and advanced the cause of science during the seventeenth century (Brofenbrenner, 1928). One of the earliest scientific societies came up in Italy. These include the Accademia dei Lincei in Rome (1600-1630) and the Accademia del Cimento of Florence (1657-67). After the Royal Society of London (1660), the Académie des Sciences came into existence in 1666 in France. In Germany, societies like Societas Ereunetica (1622), Academia Naturae Curiosorum (1651), Collegium Curiosum sive Experimentale (1672) and the Berlin Academy of Sciences (1700).

Further, the Swiss Natural Science Society was up in 1815. It formed the prototype for the German society, Deutscher Naturforscher Versammlung, which was founded in 1821, and held its first meeting at Leipzig in 1822. German society provided a model for the establishment of similar societies in Europe and the United Kingdom by the late nineteenth century. These include England's British Association for the Advancement of Science (BAAS) (founded in 1831), 'Congres Scientifiques' in France (1833), Italy's

'Riunione deli Italiani Scienziati' (1839), 'Skandinaviska Naturforskare och Läkare' of the Scandinavian countries (1839), Hungary (1841), Russia (1863), Poland (1869), and Czechoslovakia (1880). The American Association for the Advancement of Science (AAAS) was founded in 1848, followed by the Australia and New Zealand Association for Advancement of Science (ANZAAS) in 1888.

Against this backdrop, it is important to recognize international relations/networks of science around these scientific societies, which are crucial for understanding their role in science diplomacy. The Royal Society of London has engaged internationally since its inception, and as discussed earlier, it instituted its first foreign secretary in 1723 to maintain correspondence with foreign scientists. Even during a difficult diplomatic situation between America and Britain, Benjamin Franklin, who was the Fellow of the Royal Society arranged a safe return passage from the Pacific for another Fellow of the Royal Society, Captain James Cook during the time when Franklin was procuring French aid for America to go to war with Britain. Even during the Cold war when the conventional diplomatic channels were disturbed, the Royal Society continued to maintain communication with the Soviet Union. The Society played a key role in restoring relations with China and South Africa after the Cultural Revolution and fall of Apartheid respectively (The Royal Society, 2015). Apart from scientific societies and professional associations of science, national science academies also support the state's strategy on science diplomacy. For example, the French Academy of Sciences played a key role in the country's science diplomacy from the 1980s, much before the term came to be used (Mays et al., 2022). However, such studies are very few. Most of the science diplomacy case studies are restricted to the Global North. In this context, it is pertinent to assess the role of one of the earliest professional associations of science, the Indian Science Congress Association in building international networks and relations in science during its early history.

Indian Science Congress Association: Tracing Its Origins & Early History

For advancing astronomical knowledge, international networks were formed during Raja Jai Singh's reign which led to the formation of some form of society of astronomers. Composed of Brahmans, Muslims and Europeans, this society also contributed to the construction of royal astronomical observatories (Kumar, 2003). Additionally, several efforts were made by Europeans to bring local surveyors, soldiers, artists, specialists to co-produce and advance botanical knowledge and terrestrial surveying (Raj, 2006). Thus, paving way for formation of science societies and highlighting the existence of networks for co-creation of scientific knowledge. These prelude the formation of the Asiatic Society of Bengal in 1784 established by William Jones. The Asiatic Society is viewed by researchers as a tree which led to the origins of several branches of scientific activity, and foundation of several departments and societies (Bagchee, 1984; Visvanathan, 1985; MacLeod & Kumar, 1995; Kumar, 2018).

Several scientific societies came up in India during the nineteenth century. These include the Literary Society of Bombay (1804), Literary and Scientific Society of Madras (1818) Agricultural and Horticultural Society of India (1820), Calcutta Medical and Physical

Society (1823), Agriculture and Horticulture Society of Punjab (1851), etc. It is important to note that the locale and scope of the majority of these societies remained restricted to a place/region or focused on literature, botany, agriculture and medicine (McClelland, 1840–1847) – subjects that catered to the imperatives of the colonial rule. However, these can be viewed as stepping stones for the foundation of the Indian Science Congress Association (ISCA). One such milestone was the foundation of the Indian Association for the Cultivation of Science by an Indian, Dr Mahendra Lal Sircar. The aim was to develop a national institution solely managed by Indians without interference from the government. However, the institution's early history was marred by struggles and until 1899, the Association primarily delivered lectures in several branches of science and arranged honorary lectures for diffusion of scientific knowledge among Indians (Indian Association for the Cultivation of Science, 1976). After no less than three attempts to build an institution similar to BAAS, ISCA was founded in 1914 by two British chemists, John Lionel Simonsen and P. S. Mac Mahon for promoting and advancing science in India. Before delving into the early history of ISCA, it is critical to understand the context and background of its foundation.

During colonial rule in India, most of the government scientific departments and societies were founded and manned by foreigners (Ray, 1958). The reservation of Europeans for the graded services and restrictions imposed on Indians can also be seen as the reason for the limited number of Indians in government scientific services/departments, etc. Several instances of discrimination against Indians in terms of pay and upward mobility in services are well-known. Prafulla Chandra Ray's autobiography provides evidence of discrimination against Indian scientists like P. N. Bose, J.C. Bose, and himself in the government services (Ray, 1958). However, from the last quarter of the nineteenth century, there was a growth of research groups around university professors who returned to India upon completion of their studies abroad. Additionally, the first decade of the twentieth century saw the introduction of university reforms and efforts towards the transformation of universities into learning centres, moving away from mere degree-giving institutions (Banerjee & Maiti, 2018).

These developments, together with the two British chemists recognizing the need for bettering the state of teaching of science and laboratories in India, led to the proposal for the foundation of the Indian Science Congress Association on the lines of the British Association for the Advancement of Science. They believed that closer acquaintance and cooperation between foreign and Indian scientists could further the advancement of science in India. Although the proposal met with consensus, there were reservations raised by some regarding the time ripe for such an organization in India, as they believed that not enough science was happening in India for traversing such large distances to attend annual meetings (Mookerjee, 1914).

However, its early history witnessed a steady growth in its membership. Its annual Congress was held in different parts of the country every year. The membership of the Association increased from 105 to 2500 during 1914 -1947 (Department of Education, 1914; Indian Science Congress Association, 1948). It was viewed as the largest and most represented body of scientific workers in India, whose council consisted of

practically all leading scientific workers of the country (Indian Science Congress Association, 1946). However, the zonal analysis provides greater participation by scientists in the eastern zone, particularly dominated by those from Calcutta and other parts of Bengal (Anderson, 2010). Need was expressed to further strengthen the influence of the Association in Southern, Western, Central and North-Western zones (Indian Science Congress Association, 1948). Until Independence, ISCA played a critical role in shaping a science community in India, institutionalization and professionalization of science as well as dissemination of scientific knowledge (Sinha, 2018; 2021). However, the focus of the present chapter is to understand ISCA's role in bringing together and catalyzing greater intercourse between Indian and foreign scientific workers working in India before Independence, as well as providing a platform for fostering contacts with foreign scientists and forging international relations and networks in/of science during 1914-1964.

Exploring Indian Science Congress Association & Its International Relations: First Fifty Years

As shown in the previous section, international networks for exchange and co-production of knowledge in astronomy, botany and terrestrial surveying already existed. The focus here is to understand ISCA's role as one of the most represented professional associations of science in India at the time, in fostering contacts with foreign scientists and building international relations in/of science during 1914-1964. Since its inception, ISCA's annual sessions have become a common meeting ground and platform for communication between Indian and foreign scientific workers residing in India. However, Anderson (2010) underlined competition between British and Indian scientists for its highest offices. ISCA's initial progress can be seen as a combined effort of foreign and Indian scientists. However, it is important to highlight that the number of co-authored papers between foreign and Indian scientific workers remained limited (British Association for the Advancement of Science, n.d.). The first meeting of the Association was held in the premises of the Indian Museum during its centenary celebrations in Calcutta in 1914. Sir Ashutosh Mookerjee, a Bengali mathematician, was elected as the Society's General President. This can be viewed as the 'first recognition of India's Independence' (Anderson, 2010). Until Independence, nineteen presidents of the Association were Indians, while fifteen were foreigners. There was also a fair representation of Indians in the committees of the Association (Sinha, 2021).

Additionally, ISCA provided a platform for engaging with scientists and scientific societies and academies of science abroad. From the 1930s, the need was felt for greater communication of Indian scientists with scientists abroad. In 1933, under O. D. Skelton, the Imperial Committee on Economic Consultation and Cooperation suggested a conference for discussing collaboration in scientific research. Subsequently, the Commonwealth Scientific Conference was held in 1946, but the focus remained limited to agriculture (British Commonwealth Scientific Official Conference, 1946). By the mid-1930s, Jawaharlal Nehru, who went on to become the first Prime Minister of India, also began emphasizing international cooperation and collaboration with scientists abroad.

Subsequently, ISCA proposed to hold a joint session with the British Association during its silver jubilee session in 1938. The letters exchanged between ISCA and the British Association show great interest taken by the latter's members and British donors to attend/contribute to the participation of British scientists in the Science Congress in Calcutta (British Association for the Advancement of Science, 1935–1937, 1947; 1938). A delegation of ninety-one members participated in scientific deliberations of the session, presided by James H. Jeans. They also gave broadcast speeches on topics of public interest and visited numerous academic and scientific institutions in India (Indian Science Congress Association, 1938). ISCA's committee also invited scientists from other countries; ten scientists from Amsterdam, Germany, Africa, Canada, United States attended the Science Congress (Indian Science Congress Association, 1938). It became a regular feature of ISCA after the silver jubilee session and especially after India's Independence in 1947.

ISCA members, general and sectional presidents, represented India at the Empire Scientific Delegation. It enabled scientific collaboration with British, American, Australian and European Societies, and created greater awareness of the value of Indian science within international spheres. As a result, ISCA received numerous enquiries from scientific bodies in Britain, Russia, America, Canada and Australia. Two delegates from the American Association for the Advancement of Science and one from the Pacific Science Association attended the Congress meeting in 1941 (Indian Science Congress Association, 1941). Such participation from international scientific institutions and organisations continued in the following years as well.

These efforts of building networks in science with British scientists and other foreign scientists need to be seen in the larger context prevailing in India at the time. This enables greater understanding of the role of science and scientists in shaping international relations and facilitating communication during difficult times as well. This period coincides with India's freedom struggle, which gained momentum from the 1930s. It was also the time when India's opposition to colonial rule reached its climax with the increased pace of the freedom struggle during the Quit India Movement, which was further aggravated by the devastating famine in 1943 and communal riots in the following years. In this backdrop and with the growing demands of post-war reorganization, authorities decided to make use of the experience and expertise in Britain. Subsequently, the Royal Society sent its Biological Secretary, A. V. Hill, on the request of the Secretary of State for the Government of India to advise on scientific matters of 'the organization of scientific and industrial research'.

During Hill's visit to India, the Royal Society held its first signing ceremony outside England. It was held during held during the Delhi session of the Indian Science Congress Association in January 1944. The meeting was attended by the Viceroy, Lord Wavell and Professor Hill, and Homi Jehangir Bhabha and Shanti Swarup Bhatnagar were formally admitted as fellows of the Royal Society. However, it was also viewed as a 'diplomatic appeasement' of the Indian scientific community (Deshmukh, n.d). Later, Hill submitted a crucial report on the state of science research in India, which was appreciated by many, including Indian scientists. Acknowledging which, P. M. S. Blackett in his presidential

address to the Royal Society in 1968 noted that Hill's report was 'first-of-its-kind' and provided a comprehensive account of the state of science in India (Royal Society, n.d.).

In light of the Second World War, Post-War reorganization also necessitated establishing closer scientific connections with technically advanced countries. As a result, the scientific liaison between America, Britain, India and other dominions was considered crucial (Information Department, n.d.). Replace with Subsequently, a delegation of six Indian scientists including Nazir Ahmed, S. S. Bhatnagar, J. N. Mukherjee, J. C. Ghosh, S. K. Mitra, Meghnad Saha went to Great Britain to study their scientific and industrial organisation. Further, nine Indian scientists visited the British Commonwealth Scientific Official Conference in 1946 (British Commonwealth Scientific Official Conference, 1946). An Indian Scientific Mission also visited the UK, USA and Canada to see recent developments in S&T research. Few eminent Indian scientists were appointed as liaison officers in these countries (Government of United Kingdom, 1947). In the context of these regular visits, it is important to note that the efforts towards scientific cooperation and collaboration continued between Britain and India, even at a time when India's freedom struggle against England was at its peak.

This continued in the post-Independence era as well. Participation of scientists from numerous scientific societies and academies across the world became a regular feature of the annual meetings of the Indian Science Congress Association. P. C. Mahalanobis and S. S. Bhatnagar's efforts enabled twenty-four representatives from various institutions to attend the Thirty-Fourth session, during which the post of 'Foreign Secretary' was also proposed within ISCA for greater contact between Indian and world science (Indian Science Congress Association, 1948). In 1957, about seventy-seven foreign delegates from sixteen countries and international agencies like UNESCO, WHO, E.O.A.F.E. attended the session. Goodwill messages were also received from scientific institutions from twelve countries, whose representatives couldn't attend. Popular and several lectures were delivered by foreign scientists (Indian Science Congress Association, 1957). In the following year, seventy foreign delegates joined the annual meeting of the Association from fifteen countries and international organizations like FAO, UNESCO and WHO (Indian Science Congress Association, 1958).

Apart from science providing a channel for communication between Indian and foreign scientists, the scientists also began to play a significant role in building international relations through/in science. The Indian Council of World Affairs organized the Asian Relations Conference in 1947 "to provide a cultural and intellectual revival, and social progress in Asia. The conference was attended by delegates from twenty-eight countries. Along with Asian delegation, there were observers from Britain, United States, Australia, Russia and the United Nations Organization (McCallum, 1947). Renowned Indian scientist S. S. Bhatnagar, the ISCA president in 1945 was a member of its working committee. Nobel Laureate, C. V. Raman, who was elected as ISCA's President in 1929 was a delegate for the conference. Recognizing the foreign efforts for the advancement of science in Asia, Raman spoke on *Scientific Research in Asia* and underlined the need for a closer contact between Asian countries for a greater fillip to scientific research. He added that most international organisations had headquarters in Europe and America, and it

was crucial to foster inter-regional cooperation and forge common policies to tackle problems as well as for all-round development of Asian countries (Proceedings of the Asian Relations Conference, 1948).

In 1953, US President Dwight D. Eisenhower gave the famous "Atoms for Peace" speech before the United Nations General Assembly which reflected his deep concern over the use of atomic energy for war, in light of the rapid strides in nuclear weapon technology and rising nuclear arms race between the US and USSR. In this background, the General Assembly of the United Nations during its plenary session in December 1954 adopted a resolution for the establishment of the International Atomic Energy Agency (IAEA) and holding an international technical conference of governments. Eighty-four member states were invited for the first UN Conference on Peaceful Uses of Atomic Energy held in Geneva in 1955. Dr Homi Jenhangir Bhabha, Chairman of the Atomic Energy Commission of India was appointed as the President of the Conference, with six vice-presidents from Brazil, Canada, France, USSR, UK and USA. In his presidential address at the Conference, Bhabha emphasized on the significance of the exchange of scientific and technical knowledge for the common good and the progress of humankind (Bhabha, 1955). He also chaired the session on controlled fusion during the second conference held at Geneva in 1958. Bhabha was instrumental in the foundation of the International Atomic Energy Agency (IAEA), which was closely associated with the issue of non-proliferation of nuclear weapons and nuclear disarmament (Deshmukh, n. d.). He also favoured the choice of Vienna over Geneva for the headquarters of IAEA. Thus, becoming a strong proponent of international cooperation on peaceful use of nuclear energy. He played a significant role in voicing the needs of the developing countries and concerns over discriminatory aspects of non-proliferation.

The Science Congress also provided a platform for building long-term engagements with foreign scientists who became closely entwined with India's scientific journey. J. B. S. Haldane was invited for the Science Congress and during his stay he gave multiple lectures at the Indian statistical Institute. Upon his return in a letter to Nehru he penned down his interest in developing and advancing biological research which had great scope in India. In 1957, he became a member of the Biometry Research Unit at the Indian Statistical Institute, Calcutta. Later, with his colleagues, he set up a research unit funded by the Council of Scientific and Industrial Research in his house. He became an Indian citizen in 1961 and headed a new laboratory of Genetics and Biometry established by the Government of Orissa at Bhubaneswar in 1962. He has written extensively on the culture of science in India and the nature of scientific institutions in India (Haldane, 1965).

Similarly, P.M.S. Blackett an English physicist met Jawaharlal Nehru, India's first Prime Minister during ISCA's annual session in January 1947. Blackett described his meeting with Nehru as one of the most important events of his life. (Lovell, 1976). During 1947-1965, he was closely involved with military development in India, advising the Minister of Defence and the Prime Minister of India. He is also known as an intervenor in scientific affairs and an adviser to the research system. The post-Independence era also saw greater interpersonal relations between Indian scientists and P. M. S. Blackett. This can be attested to by several letters exchanged between P. M. S. Blackett and Indian scientists

like Bhabha, P. C. Mahalanobis, D. N. Wadia, Vikram Sarabhai, S. N. Bose, M. L. Dhar, etc. during 1951-1973. Blackett wrote an obituary for Bhabha in 1966, acknowledging his twenty years' close friendship with him and his death as loss to the world of science and a great tragedy for India who just before his death was planning to expand the electronic industry of India (The Royal Society, 1948–1973). During the period of study, several letters and correspondences exchanged between Indian and British scientists establish professional and personal linkages between them, including recommendations/ references for election as fellows of academies of science and scientific societies.

The social responsibility of scientists and the social implications of scientific discoveries remained central to the Association's scientific discussions. ISCA's first President emphasized that ISCA, through its annual meetings across the country, will be an opportunity for the scientific workforce to get acquainted with the practical needs of the country (Asiatic Society of Bengal, 1914). Thus, reiterating the need for scientists to understand social, economic and political conditions of the country. From the 1930s, the social implications of science began to be increasingly discussed internationally by scientists like J. D. Bernal. D. N. Wadia's presidential address also focused on the social obligations of science. He underlined the need for application of science to the problems of daily living and the social needs of the common people. He lauded the initiation of the subcommittee on Science and its Social Relations during the Indian Science Congress in 1939 in Lahore. Its foundation was seen in conjunction with similar efforts taken by BAAS and AAAS along with the International Council of Scientific Unions (Wadia, 1942).

The Second World War made the dangers of misuse of scientific discoveries evident. These were discussed during ISCA's annual sessions (Mills, 1932). Increasingly, both positive and negative sides of the scientific work became visible and control of its lethal side was stressed (Fermor, 1934). Although it was believed that science and scientists can't be blamed for misuse of the scientific discoveries, during ISCA sessions greater responsibility among scientists was emphasised to ensure that science was solely utilized for human welfare and not for degradation and destruction of humanity (Indian Science Congress Association, 1940). As the world largely evolved as one economic and cultural unit, there was a need to shed an aggressive attitude and develop an earth-wide attitude based on 'humanizing influence of science' (Saha, 1934). D. N. Wadia's address in 1942 underlined the dangers of the misuse of science and reiterated that the pooling of scientific knowledge through pure.It was believed that the perversion of science could be checked by the foundation of an international directorate of science which contained economists, engineers and industrialists. Unequal distribution of minerals across the world and a planned international mineral policy could help eliminate the friction and increase greater international cooperation for the ultimate benefit of all and future security of the people (Wadia, 1942). Therefore, a greater sense of responsibility among the scientists could enable them to render post-war reconstruction (Indian Science Congress Association, 1946).

Beyond the scientists, the Prime Ministers' presence at the annual science congress became a regular feature. It served as a podium to profess responsible use of scientific discoveries for the betterment of humankind and to tackle challenges. Great importance was attached by Prime Minister Jawaharlal Nehru to the Indian Science Congress. Nehru's

speeches on several occasions before and after India's Independence has put forth India's commitment towards peace in the atomic age. In his presidential address to the Thirty-Fourth session, he stated that India would cooperate internationally in science in the cause of peace and development, but not for war. Nehru in the 1957 session sought the cooperation of scientists not just to build the country but to build a better world of peace (Indian Science Congress Association, 1957). Thus, ISC regularly highlighted the commitment of science to leverage its discoveries responsibly and its use solely for the welfare of humankind.

Conclusion

During the first fifty years of its existence, the Indian Science Congress Association, which was also one of the earliest professional science associations in India, provided a significant platform for catalyzing a community of scientific workforce in India, comprising Indians and foreigners (most of whom were expatriate scientists). The forum helped mitigate the spatial and discipline-centric isolation faced by the scientific workforce in India. Not just that, it provided a platform for scientific discussions and enabled forging networks/contacts with scientists and scientific institutions abroad. Delegates from several countries' scientific institutions as well as international organizations became a regular feature of its annual congress in the post-Independence era. At the same time, several Indian scientists visited foreign institutions and gained recognition and were elected as Fellows of international academies of science and scientific societies, and represented India on several international fora.

Even at the peak of India's struggle for Independence from the British rule, science provided the medium for constant engagement and international cooperation with Britain and other advanced countries. ISCA's members, general and sectional presidents, contributed significantly to the advancement of science and scientific organizations in India. Additionally, they began representing the country and also contributing to issues of international concerns like peaceful uses of atomic energy, greater inter-regional cooperation within Asia for an all-around development across Asia as well as long-term peace. ISCA's sessions, presidential addresses reiterated the greater responsibility of science and scientists, and the need for international cooperation. Thus, stressing that in a globally interconnected world, science needs to be leveraged solely for the betterment of society and peace, and not misused for destructive purposes and war. Although the present chapter is limited to the first fifty years of its existence, ISCA continued to contribute to deliberations on international issues like environment, sustainable development goals in the following decades. Participation of government ministries/departments during its sessions underline the significance attached role of scientists and science in tackling existing and emerging challenges, most of which have scientific and technical dimensions in understanding and finding solutions for such problems. Several reservations and challenges are now faced by this more than a century old institution, but it has played an important role in shaping and strengthening international relations in science is of utmost significance and can be seen as a historical case study for the role of science societies in international relations of science and science diplomacy from a Global South perspective.

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