ROYAL SOCIETY TURNS 350

The Royal Society that has pioneered scientific discovery and exploration and is among the oldest scientific academies in existence turns 350 this year.

Safeguarding the science policy and prophesies of the public, it has been so, since the middle of the 18th century. Through the outstanding stand of its fellows it has also been the advisor of the European Commission and United Nations on controversies involving the materialization of precarious science. Celebrities of eminence like Isaac Newton, Charles Darwin and Albert Einstein up to Stephen Hawking have been there as fellows, the fellowship remaining its backbone and global hallmark.

The medieval relics are still there on the premises of Carlton House Terrace, which is hosting a grand exhibition on the society’s rich heritage dating back to the rampages of absolute ecclesiastical authority. The despotic defence of the mystical theology was much rampant, compelling everything to bow before it, including the philosophical thought. It was an offence to reject the reason of the religion, throughout the long interval, from the overthrow of the Roman Empire to the fourteenth century. Gloomy gannets of superstitions and deep ignorance hung over the clouds of Europe, except for the noble aspirations of the Italians, representing a silver line. Italy was, no doubt, the fair land on which rose the intellectual sun preluding an intrepid pursuit of truth and substance. The wealthy inhabitants of the principal Italian cities became the ardent cultivators of literature and philosophy ransacking much of the intellectuals from Europe.

No fewer than 171 Academies and Societies were there in Italy at that time instituted in the form of independent universities. It is interesting to note that Galileo was a member of one of such Societies, known by the name, the ‘Lyncean’. However, the much celebrated among them was the Academy founded in Florence in 1582 which was for purifying the national tongue, publishing a well-known dictionary in 1612. Upto this period, there was no Academy or institution of similar kind either in France or in Germany.

The inception and proposal for such an Academy in England was first made by Edmond Bolton in 1616, an eminent scholar and antiquary of that period. King James I was on the throne and so Bolton proposed its title to be “King James His Academe of Honour” to attract his favour. But, the death of the king in 1625 put an end to everything novel, including this ambitious dream.

contrary to popular belief, the first Indian fellow of the Royal Society was not Srinivasa Ramanujan, the mathematical genius. The distinction goes to Ardaseer Cursetjee, India’s first modern engineer bringing industrial revolution to the gateways of India. He was elected as fellow on 27 May 1841. Ramanujan came second in 1918 followed by J.C. Bose in 1920. It is to the credit of the Royal Society that C.V. Raman was elected as its fellow before he was awarded the Nobel Prize in Physics.

Meghnad Saha, Bibhut Sahni, K.S. Krishnan, Homi J. Bhabha, Shanti Swarup Bhatnagar, Subrahmanya Chandrasekhar, P. Maheshwari, C.N.R. Rao, and M.S. Swaminathan are the prominent among the many who have represented the wisdom of India in the Society.
The “Invisible College”

The ‘Minerva’s Museum’ came next, under the patronage of Charles I, but rather than for spreading knowledge, it was intended for fencing it for the noble youth. The aristocratic tendency of it was too obvious in demanding anybody to be admitted to submit a testimonial of his arms and gentry. On the other side, France was moving at length to follow the stirring example of Italy, forming a private society of learned men in Paris, deliberately choosing the name the “French Academy”.

It was established in 1629 with no equivalent across the English Channel, a disgrace for the learned Britons. Academic gatherings were not uncommon in England during that time, but none for the discussion of scientific subjects. The vacuum prevailed for decades, until a group of natural philosophers formed an “Invisible College” without waiting for a royal decree. Samuel Hartlib was the pioneer of this, extended through Robert Boyle, John Wilkins, Robert Hooke, William Petty, Christopher Wren and some others. Alchemists, Astronomers and Mathematicians were among them, but the purpose was common: “acquiring knowledge through experimental investigation”.

Records of the “Invisible College” commence from 1646 and there was no University in London at that time except for the ‘Gresham College’, which remained an “unusual institution of higher learning”. It was founded in 1597 under the will of Sir Thomas Gresham, forming a platform for the public for the frequent voicing of their novel ideas. It granted no degrees, nor enrolled any students, but played a...
major role in the medieval enlightenment of the English people.

Some members of the “Invisible College” were there in Gresham College as professors, such as Christopher Wren lecturing on Astronomy and Robert Hooke on natural philosophy. The specialty of the Gresham College was that it acted as a precursor for the invisible college, attracting more members to it. Everything was in an air of friendliness, enacting no rules or boundaries, enabling a wide and enriching correspondence even from Johannes Kepler, Tycho Brahe and other eminent scientists.

The Royal Charter

In the past, the ‘invisible college’ remained truly “invisible” in the sense that it had no official building of its own, the members meeting in a variety of locations, including their own houses and sometimes at the Gresham College. At first, they were twelve, but the membership expanded over time, eventually splitting into two factions, such as the ‘London Society’ and the ‘Oxford Society’, in 1638 due to the traveling inconvenience of its members. Among these, the Oxford Society was more active to an extent remarkable for that period, in an attempt to overlay the heavy network of theologic dogmatism.

Initially they had no rules at the “invisible college”, but the Oxford faction thought that they needed some to orient themselves more systematically. “The Philosophical Society of Oxford” was the result, as a separate institution, but still maintaining links with their companions at Gresham College, which had turned out to be the regular meeting place of the London group. The need for a permanent “college” was much felt during that period, following their survival through the infamous English Civil War of 1658.

The proposal for a structured society was first made by John Evelyn, in a letter to Robert Boyle dated 3 September 1659, who wanted it to be a learning centre for advanced research and discussion on the emerging “new science”. Suggestions were also there from other members like Abraham Cowley and Bengt Skytte raising a common expression. Accordingly, a “College for the promotion of Physico-Mathematical Experimental Learning” was decided to be formed in a meeting at the Gresham College on 28 November 1660.

It had to meet on all weeks and at the second meeting it was announced that King Charles II had approved their gathering through a Royal Charter signed on 15 July 1662. Thus the “Royal Society of London” was created, with Lord Brouncker as the first president. With a second Royal Charter signed on 23 April 1663, the “coat of arms” was granted to the President and to the fellows of the Society along with their successors.
The Society

The Royal Charters designated the King as the founder of the Royal Society, which was for the “improvement of natural knowledge”. The appointment of the members of the society was authorised in the second Charter, designating them as the “fellow of the Royal Society”. In the beginning, there were 98 fellows, now known as the “Original Fellows”.

The Society was governed by its council, which was chaired by the president of the society. The members of the council and the president were elected from the fellows by the fellows. The fellows had the right to elect new Fellows (still followed as a custom today) and also a responsibility of financially sustaining the society.

Even though the king was supposed to be the patron, the society could not rely on his financial assistance and so the favour of wealthy nobles was necessary for the survival of the society, in its earlier times. So, many of the early fellows of the society were not scientists or eminent intellectuals and this inevitable practice continued until the financial security of the society became more certain. In May 1846, a committee recommended the selection of fellows purely on scientific achievement, delimiting the members exclusively as scientific personalities.

The fellows of the Royal Society are elected for life, based on their “substantial contribution to the improvement of natural knowledge, including Mathematics, Engineering and Medical Science”. Forty-four fellows are elected each year and currently there are 1,314 in total. The fellows gain the right to use the ‘FRS’ title after their name, as a prestigious icon, rather than a statutory bearing.

The society also elects three more kinds of fellows known as the ‘Royal fellows’, ‘Honorary fellows’ and ‘Foreign Members’. The Royal Fellows are from the Monarchy of the United Kingdom. People who are ineligible to be elected as fellows, but “whose election would significantly benefit the society” form the Honorary fellows. Foreign members are scientists from non-commonwealth nations “who are eminent for their scientific discoveries and attainments”. They also are elected for life, but their postnominal title is ‘For MemRs’, not ‘FRS’. The elected fellows of the society include famous scientists such as Isaac Newton, Charles Darwin, Ernest Rutherford, Albert Einstein and Stephen Hawking.

The Indian Links

India has long occupied prominent place in the activities of the Royal Society, as evident from the historical collections of the society. In the Register Book of 1663, there is a report on how the natives of Coromandel vivified their drinks by exposing them to the sun and wind. The Brahmin observatory in Benares was visited by Sir Robert Baker FRS in 1774, revealing the geometrical tables used by the astronomers there, for predicting eclipses of the Sun and the Moon. Joseph Dalton Hooker during his tenure as President to the Royal Society in the 19th century came to study the great equinoctial ‘Sun-dial’ there, but only to find it in a sad state of disrepair. A reference meridian to British Indian was established by William Petrie FRS who made it possible through his own instruments equipped in an observatory at his residence in Madras. It was that which became “India’s equivalent of Greenwich”, playing a prominent role in astronomical aids to navigation throughout the 19th century.

The East India Company strengthened its hold on India
As part of the Royal Society’s 350th Anniversary celebrations, an exhibition “The Royal Society: 350 Years of Science” will feature a number of treasures from the Royal Society’s extensive collections of archives, rare books, artefacts, and portraits.

The inception and proposal for such an Academy in England was first made by Edmond Bolton in 1616 following the British colonial adventures during the 18th century. Better means of transport and telecommunication such as railways and electric telegraph were coming to India demanding accurate physical surveys. The ‘Survey of India’ was established by the East India Company in 1767, which initiated the ‘Great Trigonometrical Survey (675)’ of India, under the guidance of William Lambton FRS.

Modern mapping methodologies and scientific surveying methods were adopted making it a grand technological victory. The name of George Everest is also worth mentioning. He joined the project as Chief Assistant Surveyor in 1818, rising to become the superintendent of the GTS, retiring as the Surveyor General of India. He had led the project to the northern parts of India, but his successors while continuing it to the foothills of the Himalayas, attributed the ‘Peak XV’ to his name, in an honour. Thus, that peak came to be known as the ‘Everest’ – the highest mountain peak in the world. The renaming was done in 1856.

Decoding the Biome
India was a land of natural novelties to the British, inspiring pioneers like Warren Hastings FRS to employ the European scientific observation analysis into the myriad of its diversity. Specimens of everything that seemed new from the natural world were sent to Britain for scientific classification and nomenclature. Many of them came to the British Museum, leading to their artistic renderings and publication.

An early production was ‘Indian Zoology’ by Thomas Pennant FRS, which came out in 1790. The next was ‘Century of Birds from the Himalaya Mountains’ by John Gould FRS, one of Britain’s foremost ornithologists. It was with beautiful hand-coloured lithographs and appeared in huge imperial folio volumes. Originally it was the catalogue of specimens sent from Nepal and northern India to the museum of the Zoological Society, where Gould was the official bird-stuffer. Study of Indian flora was done under the direction of Sir Joseph Banks, the then president of the Royal Society, mainly by William Roxburgh, which was extended by Nathaniel Wallich FRS. His work Plantae Asiaticae Rariores published during 1830-32 is still considered an authentic reference on Indian plants.

Leaving a Trail
Everything in pre-independent India was cast out from imperial British moulds with preserved elegance in those basic patterns. The Indian National Science Academy set up in 1935 was no exception with an emblazoned Royal Society in its featured amulets.

Apart from these distant engravings, a ‘true friend of India’ was there at the Royal Society, helping the country during its formative years of independence. It was Patrick Blackett, who was the fellow of the Royal Society from 1933 and president during 1965-70. He was met by Shanti Swarup Bhatnagar FRS at the Empire Scientific Conference in London in 1946, leading to an invitation to attend the Indian Science Congress which was due on January 1947. Nehru was there at the Congress and it was the beginning of a long friendship.

Blackett went on to stay for several extended visits to Nehru’s Prime Ministerial residence in Delhi serving as an advisor on military and scientific matters. He was there to shape our economic growth, education and development of atomic energy. In 1972, an agreement was made between the Indian National Science Academy and Royal Society enabling a large number of collaborative activities between UK and India. Even today the relationship continues to flourish with a real impact on issues of global concern.

Rosalind Elsie Franklin was a British biophysicist, physicist, chemist, biologist and X-ray crystallographer who played a key role in the elucidation of the structure of DNA but received little recognition before her untimely death. She is one of the ten most influential British women in the history of science according to a panel of leading female scientists and science historians assembled by the Royal Society to affirm its commitment to the advancement of women in science.