

Brief History of Science in Ancient India

By Anjana Chattopadhyay

Today we have very few scattered sources to know and study the extent of scientific contributions made by our predecessors. Biographical Dictionary of Indian Scientists tells the story of Indian science through the lives and achievements of men from earliest times to the present day. Biographical details of ancient and medieval scientists are collected from books, commentaries, translations, bibliographies and classical documents on history of Indian science.

ARYABHATA-I (Astronomer)
Aryabhata was a great astronomer who wrote Aryabhatiya in 499 A.D. It was translated into Arabic in about 800 A.D. under the title Zil-al-Arjabhar. He stated that the earth is a sphere and it rotates on its axis.



He described the true theory of the cause of the lunar and solar eclipses and said that eclipses were not caused by 'Rahu' but by the shadow of earth and moon. He also laid the foundation of algebra and made many new observations in geometry.

ASVIN KUMARS (Physician)
Twin sons of Vivasvat and Saranyu, Asvins were celebrated as 'divine physicians' of Vedic period. Rig Veda abounds in citations of their medical skill and benevolent deeds. Their skill in therapeutics and surgery is the theme of more than 50 hymns of Rig Veda. They were celebrated for the skill of restoring youth to old, curing the sick, weak, blind and the lepers. They were

probably the actual human physicians, who became deified because of their extraordinary skill and unflinching kindness. In addition to Ayurveda they learnt 'Madhuvidyā'



the science of restoring the dead to life from sage Dadhichi.

BAUDHAYANA (Mathematician - Geometrician)

Baudhayana was the first great geometrician of the Vedic altars. The science of geometry originated in India in connection with the construction of the altars of the Vedic sacrifices. These sacrifices were performed at certain pre-calculated time, and were of particular sizes and shapes. The expert of sacrifices needed knowledge of astronomy to calculate the time, and the knowledge of geometry to measure distance, area and volume to make altars.



Strict texts and scriptures in the form of manuals known as Sulba Sutras were followed for performing such sacrifices.

Bandhayana's Sulba Sutra was the biggest and oldest among many Sulbas followed during olden times which gave proof of many geometrical formulae including Pythagoras' theorem.

BRAHMAGUPTA (Mathematician)
According to Al-beruni, Brahmagupta was the most distinguished mathematician of India who gave zero its status. He composed Brahma-Sphuta-Siddhanta, which



dealt with algebra, arithmetic, geometry and astronomy. In the chapter Kutakadhay (on algebra) Brahmagupta for the first time dealt with zero and its operation. He was the first mathematician to frame the rules of operation for zero. He not only expressed his own views on these subjects but also compared them with those of the earlier mathematicians. So his works have a lot of historical interest in these fields.

CHARAKA (Physician)
There is absolute lack of information about the parentage, place and time of birth of Charaka. According to some scholars Charaka may be placed between the 3rd and 2nd century B.C. Charaka is regarded



as the principal exponent of the medical system known as 'Kayachikitsa'. He composed Charaka Samhita, which is the earliest medical treatise recognized in India. The work reveals the author's extensive knowledge of plant, mineral, and animal resources for treatment of diseases.

DHANWANTARI (Physician)

According to Hindu mythological stories, Dhanwantari was the son of Gulvana



and Virbhadrā and disciple of Bhaskara. He is also considered as an incarnation of Vishnu and worshipped as such even today. Dhanwantari taught surgery to Sushruta. He was the god of classical Indian medicine and is still held in high esteem.

MEDHATITHI (Mathematician)
Medhatithi's name is associated with 313 verses of Rig Vedic hymns. Reference of his name is also found in Athar Veda and Yajur Veda. Numerals are essentially of Indian origin. His greatest contribution to the science of numerals is the concept of powers of ten in enumeration. He propounded concept of numerals in Rig Veda and Yajur Veda as: 'Mithuna' for two, 'Tri' for three, 'Turiya' fourth or one-fourth, 'Panca' for five... 'Sata' for hundred, 'Sahasra' for thousand, 'Ayuta' for ten thousand, 'Nityuta' for hundred thousand and 'Paradha' for a billion.

NIMI (Ophthalmologist)
Nimi was said to have identified 76 eye diseases. His valuable details concerning eye diseases are mentioned in several standard medical treatises. While no work of his individual authority is available now, he was said to be a master of curing eye ailments including cataract. His views on tastes and development of foetus are considered valuable.

SUSHRUTA (Surgeon)
Sushruta was the son of Visvamisra and belonged to the Himalayan region. He is considered as the 'Father of Indian Surgery' and the compiler of the first classical book of Indian surgery 'Sushruta-Samhita'. He is said to have learnt the art and science of surgery from Dhanwantari in the Himalayan retreat, along with other sages. His book gives details of 101 types of surgical instruments and their handling techniques.



The science of transplanting sensible skin flap is entirely an Indian method, which is evident from 'Sushruta-Samhita' (Sustrasthanam Ch.XVI). His practice to give medicated wine to patients before surgery in order to numb his senses makes him an expert in anaesthesia. Sushruta described a novel method of stitching the wound after operation, by using ant-heads as stitching material. 'Sushruta-Samhita' was translated in to Arabic as Kitab-ShawShoon-a-Hindi and Kitab-I-Susrud.

VARAHAMIHIRA (Astronomer & Astrologer)

Varahamihira was the best known and



the most respected astrologer of India. He was a resident of Ujjain or Avanti, near Ujjain. He was an authority on the Brahma-Sphuta Siddhanta of Brahmagupta. He contributed many important works namely Panchasiddhantika, Brhat Samhita, Sama Samhita etc. Among all these treatises, Panchasiddhantika is the one of great repute. The Brhat Samhita described four types of earthquakes as 'Vayumandal', 'Agnimandal', 'Indramandal', and 'Varunamandal', he also gave 'Bhukamp Lakshan' for these four types of earthquakes.

The author is director general of the Delhi Public Library and is recipient of Gandhi Rajbhasha Shield
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Panel constituted to examine school fee hike

The Delhi government has constituted a committee after the high court directed it to examine the accounts of private schools allegedly charging high tuition fees.

"Justice Anil Dev Singh, retired chief justice, Rajasthan High court, will be the chairperson. J.S. Kochar, chartered accountant and R.K. Sharma, retired additional director of education, will be the other two members," said the government notification issued Saturday.

The government had Sep 9 told a division bench of Justice A.K. Sikri and Justice Siddharth Mridul that it will set up the panel within a week.

Earlier, the bench had directed the setting up of the committee to audit the accounts of each of the schools to ascertain if the hike, effected in 2009, was required.

The bench authorized the committee to scrutinize the accounts of minority

schools as well.

"If the committee finds that the hike was not required, the schools are bound to return the money to students with 9 percent interest," the bench had said in a 143-page verdict Aug 12.

The court suggested that the Delhi government create a permanent regulatory authority, either by amending the education act or by enacting new legislation, to resolve the issue of periodic hikes in tuition fees.

It also suggested the central government frame a national policy on fees for unaided schools.

The bench's order came on a public suit filed by Delhi Abhibhavak Mahasangh, which had alleged that despite the Comptroller and Auditor General's indictment of 25 private schools for accounting malpractices including faking losses, the Delhi government had allowed

them to hike tuition fees.

The government notification, issued Feb 12, 2009, had said that any school, charging a monthly fee of Rs.500, will be allowed to hike this by Rs.100. Likewise, any school charging a monthly fee of Rs.1,000 will be allowed to effect a maximum hike of Rs.200.

Schools with a monthly fee of Rs.1,500 were allowed a Rs.300 hike and those with a fee structure ranging between Rs.1,500 and Rs.2,000 were allowed to hike it by not more than Rs.400.

The rest of the schools with monthly fees of more than Rs.2,000 were allowed by the notification to hike it by only Rs.500.

The Delhi government had approved the hike to ease the schools' financial burden due to the increase in teachers' salaries as per the Sixth Pay Commission recommendations.

Man thrown out of Kejriwal rally for asking questions

A young man was pushed out of a public meeting Saturday night addressed by activist Arvind Kejriwal after he asked him why Team Anna was opposed to Congress.

TV footage of the incident in Uchana Kalan area showed a man in a blue shirt trying to get close to the dais where Kejriwal and other Team Anna members were addressing the public.

The man tried to question Kejriwal on Congress. Seeing this, Team Anna sup-

porters, some of them sporting Gandhi caps, pulled him away and the rest of the crowd also started pushing him.

The man's shirt was torn in the process and he was pushed out of the venue.

On Sunday, Kejriwal described the incident as unfortunate. "Some people in the crowd got excited when he asked us some questions. They pushed him out which was not the right thing to do."

"We are willing to answer questions

from anyone. We are not shying away from this," Kejriwal said.

Kejriwal and other Team Anna members are in the Hisar Lok Sabha constituency, where by-election will be held Oct 13, to campaign against the Congress for not bringing an effective Jan Lokpal bill.

On Saturday, Kejriwal had called upon Hisar voters to give a historic defeat to the Congress for trying to protect the corrupt.

— IANS

Congress approached Anna: Kejriwal

Activist Arvind Kejriwal Sunday claimed the Congress has been approaching Anna Hazare to seek an end to the ongoing tussle between the two sides on the Hisar by-election in Haryana.

"Nobody has approached me but I think some people (from Congress) have been approaching Anna ji and some people went to meet him recently," Kejriwal told reporters here.

Kejriwal, who has been campaigning against Congress in Hisar, denied any kind of compromise between the two sides until the Congress commits to pass the Jan Lokpal bill.

"There can't be a compromise as we need a strong Lokpal Bill," he said, adding that Team Anna is treating Hisar by-election as referendum on Lokpal Bill.

"I appeal to people of Hisar to give

befitting reply to Congress in the by-election," he added.

The by-election to the Hisar seat, to be held Oct 13, was necessitated after former chief minister and sitting MP Bhajan Lal's death in June.

Hazare has appealed to voters not to vote for Congress as it is not ready to pass the Jan Lokpal Bill in winter session.

— IANS



Pune firing: NCP blames Oppn, 2 cops suspended

Maharashtra government, recently suspended two police officers for Maval firing after the Opposition stalled the Maharashtra Assembly demanding the resignations of the Deputy Chief Minister Ajit Pawar and Home Minister RR Patil. Inspector Ashok Patil and Sub Inspector Ganesh Mane have been suspended for running after the villagers and firing at them. On Thursday six constables were suspended for damaging vehicles of the protestors.

But the Nationalist Congress Party (NCP) came to their defence saying the police had no choice but to fire at villagers. The firing by police resulted in three protestors dying on Tuesday. Videos show the police aiming at head-height while firing and chasing unarmed agitators with lathis.

The NCP also claims the villagers were provoked by the Opposition Shiv Sena and Bharatiya Janata Party (BJP). Meanwhile, the Opposition met the Governor, K Sankaranarayanan, on Friday morning asking for a dismissal of the Maharashtra government over the issue.

"We have requested the Governor to ask the Centre to dissolve the Maharashtra government. The Governor has assured us that he will discuss the issue with the Chief Minister and then take a decision," said Opposition leader and BJP MLA Eknath Khadse.

Even state Chief Minister Prithviraj Chavan also met the Governor to discuss the matter. The Chief Minister said the probe report will be out in three months.

Meanwhile, the Maharashtra Police

are defending his forces action saying they acted with utmost restraint.

"Suddenly the protestors came out on the highway, we exercised utmost restraint. We requested them to clear the highway after the protest, they refused and the crowd turned violent and started attacking. They attacked the police vehicle and started setting ablaze, the police vehicle," said one rural SP Sandeep Karnik.

The video with CNN-IBN shows the police trying to pull Sathe - one of the protestors - away from the spot. In a matter of a minutes, Sathe was found dead with a bullet injury.

The Opposition though remains unconvinced. BJP, Shiv Sena and MNS leaders met the Governor demanding the dissolution of the government. They also demanded strong action against NCP ministers Ajit Pawar and RR Patil.

But the question remains as to how did Mareshwar Sathe die - a question the Maharashtra government and the police are finding hard to answer.

"As we were dispersing the crowd from highway he was also removed from the spot by police. He ran away from the police and merged again with the crowd," said Karnik.

Meanwhile, the NHRC has issued a notice to the Pune Police Commissioner over the firing.

With it being the last day of the assembly session the issue is expected to simmer down politically. A judge will be appointed to look into the matter by next week and a report will be submitted after three months. Will the real culprits be brought to book?