

Excellence in science pursuits & leadership for societal benefits

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The Department of Science and Technology (DST), Government of India salutes our country on the occasion of the Independence Day. On this great day, the DST rededicates itself in its tasks with greater zeal and enthusiasm. The guiding principles that will foster this renewed momentum are excellence in science and technology pursuits and leadership for societal benefits that emerge from such initiatives. The past year saw the launch of many mega projects. The outcomes of these projects will significantly enhance the spread and depth of science and technology centered services to enhance quality of life of fellow citizens. The Big Data initiative is a typical case in point. Its contextual problem solving framework will resolve challenges in many fields. These are as varied as engineering, medicine, materials, atmospheric sciences, cyber security, daily commodity prices, cognitive science etc. A snapshot about several such initiatives and DST's integrated approaches for human and institutional resources development is presented in DST's recent publication titled Brief Account of Two Year's Achievements 2014-16.

The DST takes note of the excellence emphatically demonstrated by many scientists, over the past few decades in our country. The outcomes of such excellence can be aligned with the guiding principles stated above. Some classic examples are captured in set of attractive panels displayed in the premises of the DST. The panels were on

1. Ruchi Ram Sahni (1863 ó 1948) ushered in scientific renaissance in Punjab. As a staff of the Meteorology Department, he prepared daily and monthly weather reports. While he worked with Rutherford and Niels Bohr on one hand, his popular lectures and demonstrations inspired citizens in many walks of life. He They were organized in towns and villages during festivals on such topics as soap-making, water and air quality, electricity, glass-making etc. He set up a workshop in 1888 to manufacture science apparatus; he often gifted to schools.
2. D.N. Wadia (1883 ó 1969) a pioneering geologist of India who co ó published the first soil map of India is well known for his work on minerals, rocks fossil discoveries. He provided a plausible explanation for the abnormal sequence of rock formations in North-Western Himalayas and the unique knee-bend of mountain chains around the Nanga Parbat. He was responsible for setting up the Institute of Himalayan Geology in Dehradun (now known as the Wadia institute), Indian Bureau of Mines, Atomic Minerals Division and so on.
3. Birbal Sahni (1891-1949) is the most famous plant fossil researcher. He was inspired by his father Ruchi Ram Sahni and spent his childhood identifying plants. Later in life he was seen all day and night cutting, grinding and polishing sections of fossils with his hands. His research helped us understand the age of the Deccan Traps and the timing of the formation of the Himalayas.
4. Salim Ali (1896-1987) the greatest field biologist of India, was born in a rich merchant family. in 1986. However, business did not interest him and he turned to biology. His studies gave new insights into bird life. He studied the Flamingos of the Runn of Kutch in depth, and conducted regional bird surveys of Hyderabad, Travancore, Cochin, Afghanistan, Kailash Manasarovar (China), Kutch, Mysore, Goa, Sikkim, Bhutan and Arunachal Pradesh. He showed that several species of the waterfowl migrated all the way to Siberia. His advice helped establish the Silent Valley and the Bharatpur Bird Sanctuary were established.

5. Nain Singh Rawat (1830- 1895) India's pioneering surveyor, was born in a poor family and worked as a teacher in Milam village in the Upper Himalayas until he joined the Survey of India in 1933. The tenacity of purpose he exhibited in his surveys in Tibet is inspiring. He also explored western Tibet, the legendary Thok-Jalung gold mines and travelled from Leh in Kashmir to Lhasa. Nain Singh's route surveys produced maps that provided the only definitive information on these parts for almost 50 years. The Great Trigonometrical Survey of India built on this formidable repository.
6. V N Shirodkar (1899-1971) studied the problem of spontaneous miscarriage especially of the second trimester of pregnancy. He devised special surgical instruments and performed the globally recognized 'Shirodkar Operation' procedure. He also established the Family Planning Association in India. Dr. V.N. Shirodkar Memorial Research Foundation screens underprivileged women for cervical cancer and investigates novel antiviral biological agents to treat virus diseases
7. T R Sheshadri (1900-1975) was an eminent chemist and a lifelong teacher. His pioneering work was on new anti-malarial drugs and synthesis of compounds. His work on the chemistry of natural products is well known. He loved his students the most and helped them in every way possible including financial assistance.
8. Panchanan Maheshwari (1904-1966) is the legendary botanist is known as the father of modern embryology. He invented the technique of test-tube fertilization of angiosperms; that helped plant breeders open up new avenues in economic and applied botany.
9. B. P. Pal (1906 - 1989) the pioneering plant breeder and geneticist is known for his role in Green Revolution. He worked on breeding of wheat with multiple-resistance traits and introduced modern technologies to breed new varieties of potato and tomato. He also established the School of Fundamental Genetics in IARI. During his term as the Director General of ICAR, high-yielding varieties of wheat, rice, sorghum and maize became available for wide spread cultivation. The ICAR model was soon emulated by several developing countries like Pakistan, Bangladesh, Philippines and Nigeria.
10. Anna Mani (1918 ó 2001) made sterling contributions to development of meteorology in India. She focused on development of indigenous instruments, including the ozonesonde. She standardized drawings for nearly 100 different weather instruments commenced on producing them. She was deeply interested in solar and wind energy. Since data on seasonal and geographic distribution of solar energy was limited, she set up a network of stations to measure solar radiation in 1957. She also set up network of 700 sites for wind measurements to gauge wind energy potential. Anna Mani retired as the Deputy Director-General of Indian Meteorological Department in 1976. Later she set up a millimeter-wave telescope at Nandi Hills, Bangalore.

The most important take away from this narration is the inspiration that pervaded excellence. The cited scientists created their own paths for progress, exemplified with sheer hard work and established institutions to sustain progress. Our country has seen many more and continues to see a large number in present times. We will soon write about them too. Current Science's Living Legends presents inspiring accounts in this regard.