SANDIP FOUNDATION

(Nashik Campus)

SANDIP FOUNDATION
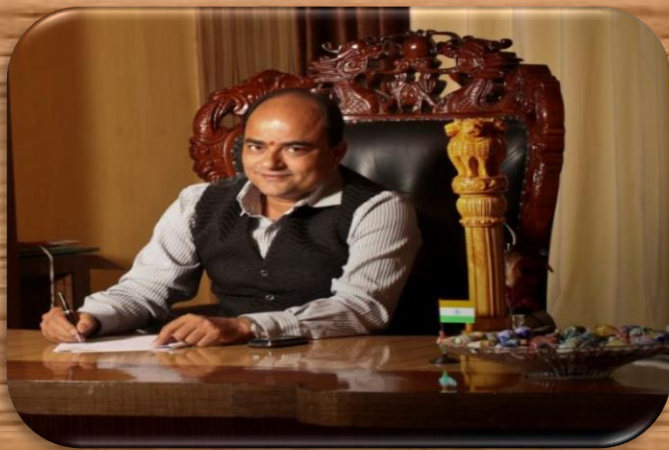
असतो मा सद्गमय ।
तमसो मा ज्योतिर्गमय ।।

STEM

E-BULLETIN

JANUARY 2016

SANDIP INSTITUTE OF ENGINEERING & MANAGEMENT

….MESSAGE FROM THE CHAIRMAN….

SANDIP FOUNDATION was established in 2005 with a vision of creating an education system from which the leaders of tomorrow emerge. Since our inception we have been aware of our strengths, motives and goals which we have set out to achieve. When we embarked on this journey, all we had was a dream and the tools of foresight and strategy. We combined these forces to pave a path of growth towards excellence and merit. Today it is our endeavour to be the most competitive institution in the country with emphasis on efficiency in everyday operations, reliability for students and thrust on discovery and development of new technologies. We are an organization that combines the latest developments in the field of education with our scientific and operational skills to create an environment which nurtures and encourages the aspirations of students. It is our aim that the combination of these factors along with the state of the art infrastructure and a dedicated teaching staff will provide an impetus to the Indian educational system as a whole. Our first campus is set up at Nashik, Maharashtra where the college building is spread across a 200 acre area. Keeping pace with the times, the campus is Wi-Fi enabled. To ensure the complete educational experience, laboratories with the latest tools and machinery are provided along with a comprehensive library with RFID technology, a computer centre with complete internet connectivity a wholesome cafeteria, all set up in a green environment to give our students the most healthy and pleasant experience as they embark and pursue their professional goals. What does an International quality Education system consist of? That is the question we asked ourselves when we set out to build this Foundation. India as a country has no problem with unemployment but there are institutions which churn out a large number of unemployable students. Should we consider ourselves an exception to this? The search for the answer has resulted in the faculty and staff to come up with innovative methods in teaching to construct new knowledge in the classroom. Our motto is to always give our students the best of what is happening in and around so that they are always at the cutting edge of academics the world over. The cultural aspect has always been a strong-point of our College as it has an acknowledged role in moulding the personality, teaching soft-skills, developing leadership and management abilities and strengthening the EQ. Extra-curricular activities, participation in sports and other cultural activities has now become universal contributing to all-round formation which is much needed in the world today. Finally we look to create an Alumnus for inspiration and support so that our students have wonderful role models to emulate. Our faculty and students remain focused on a quality of education that is not just a college degree but a way of life.

HON. DR. SANDIP KUMAR JHA
CHAIRMAN
SANDIP FOUNDATION

....MESSAGE FROM MENTOR & GM....

GM Message

Sandip foundation was established with the core objective of rendering selfless and dedicated, service to higher education in the disciples of Engineering, Sciences, Arts, management studies, Polytechnic and Pharmacy. It is our vision to provide education aided by the best infrastructure available in the most congenial atmosphere so that every student can aspire, achieve his dreams and succeed in life. The visionaries of Sandip Foundation have been involved in the field of higher education since the last fifteen years. During this period they have provided the most valuable service to thousands of students across the country. In the quest to enhance the cause of higher education, professional courses across various fields are designed and set up with the institution housed out of Nashik.

Hon. Mohini Patil
GM, Sandip Foundation

Mentor Message:

Sandip Foundation is an educational institution, which strives to form men and women who will build more than just a human world. It strives for an intellectual endeavour that focuses on critical and creative thinking, with the aim of social transformation. The college makes a preferential option for the marginalized and it seeks or give an all-round formation, inculcating both human and spiritual values. Competence, compassion and commitment are the hallmarks of the human person we seek to encourage. The infrastructure is world class with workshops, state-of-the-art Laboratories, overhead projectors in every classroom, and extensive library hostel facilities for outdoor students. The faculty and staff are dedicated in their task of making the Institution a world class learning centre and hence constantly look to improve the learning process.

Hon. Prof. P. I. Patil
Mentor,
Sandip Foundation, Nashik

Prof. (Dr.) R. G. Tated
Principal

Prof. N. L Bhirud
Dean Admin

Prof. A S Dube
Dean Academics

Prof. V A Kolhe

HoD (Mechanical)

Prof. Dr.D P Kadam

HoD (Electrical)

Prof.D Patil

HoD(E&TC)

Prof. K Bidkar

HoD (Civil)

Prof. K Nalavade
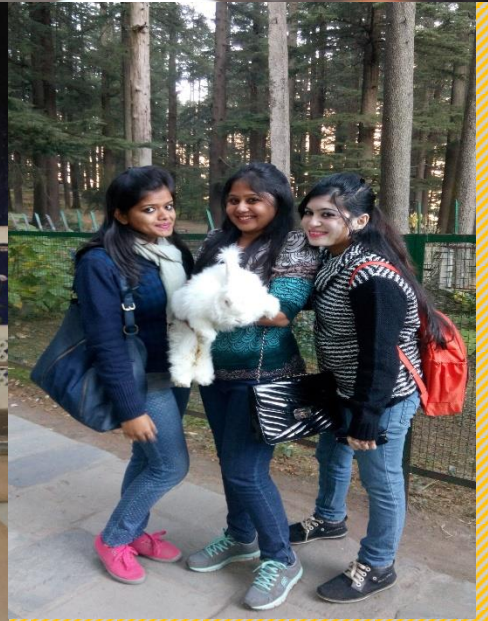
HoD(Computer)

Prof. R J Nayak

HoD(First Year)

The Punjab-Himachal Tour

Students of final year of Electrical Engineering and Electronics & Telecommunication Engineering was on an educational tour to Punjab-Himachal Pradesh during the month of December, 2015. The tour covered many exciting sites across the state.
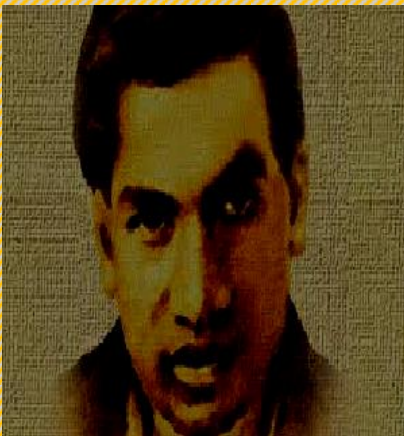
The Indian Mathematical Genius
& the Man behind National Mathematics Day
Srinivasa Ramanujan – a Biography

By

Ms. Neetu M. Sharma

Assistant Professor in Mathematics, Sandip Foundation's SIEM

The day 'December 22' is celebrated as the **National Mathematics Day** to mark the birth anniversary of the great Indian mathematical genius **Srinivasa Ramanujan**.

Achievements: Ramanujan independently discovered results of Gauss, Kummer and others on hypergeometric series. Ramanujan's own work on partial sums and products of hypergeometric series have led to major development in the topic. His most famous work was on the number $p(n)$ of partitions of an integer n into summands. Srinivasa Ramanujan was a mathematician par excellence. He is widely believed to be the greatest mathematician of the 20th Century. Srinivasa Ramanujan made significant contribution to the analytical theory of numbers and worked on elliptic functions, continued fractions, and infinite series.

Srinivasa Aiyangar Ramanujan was born on December 22, 1887 in Erode, Tamil Nadu. His father worked in Kumbakonam as a clerk in a cloth merchant's shop. At the age of five Ramanujan went to primary school in Kumbakonam. In 1898 at age 10, he entered the Town High School in Kumbakonam. At the age of eleven he was lent books on advanced trigonometry written by S. L.Loney by two lodgers at his home who studied at the Government College. He mastered them by the age of thirteen. Ramanujan was a bright student, winning academic prizes in high school. At age of 16 his life took a decisive turn after he obtained a book titled" A Synopsis of Elementary Results in Pure and Applied Mathematics". By 1904 Ramanujan had begun to undertake deep research. He investigated the series (1/n) and calculated Euler's constant to 15 decimal places. He began to study the Bernoulli numbers, although this was entirely his own independent discovery. He was given a scholarship to the Government College in Kumbakonam which he entered in 1904. But he neglected his other subjects at the cost of mathematics and failed in college examination. He dropped out of the college. Ramanujan lived off the charity of friends, filling notebooks with mathematical discoveries and seeking patrons to support his work. In 1906 Ramanujan went to Madras where he entered Pachaiyappa's College. His aim was to pass the First Arts examination which would allow him to be admitted to the University of Madras. Continuing his mathematical work Ramanujan studied continued fractions and divergent series in 1908. At this stage he became seriously ill again and underwent an operation in April 1909 after which he took him some considerable time to recover. Ramanujan had his first paper published, a 17-page work on Bernoulli numbers that appeared in 1911 in the Journal of the Indian Mathematical Society. In 1911, Ramanujan approached the founder of the Indian Mathematical Society for advice on a job. He got the job of clerk at the Madras Port Trust with the help of Indian mathematician

FOR THE CURIOUS MIND

Ramanujan is said to have discovered the following magic square. Apart from the Rows, Columns and the Diagonals adding to 139, it is unique in many other ways:

The corner numbers add up to 139.

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

The sum of identical coloured boxes is also 139.

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

Central squares add up to 139.

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

Try these combinations:

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

Finally, did you notice something beautiful about the first row?
IT IS RAMANUJAN'S DATE OF BIRTH (22-12-1887)!
The number 139 is also special in many ways: It is a twin prime with 137. It is the sum of five consecutive prime numbers (19 + 23 + 29 + 31 + 37).

RAMANUJAN MAGIC SQUARE

Ramachandra Rao. The professor of civil engineering at the Madras Engineering College C L T Griffith was interested in Ramanujan's abilities and, having been educated at University College London, knew the professor of mathematics there, namely M J M Hill. He wrote to Hill on 12 November 1912 sending some of Ramanujan's work and a copy of his 1911 paper on Bernoulli numbers. Hill replied in a fairly encouraging way but showed that he had failed to understand Ramanujan's results on divergent series. In January 1913 Ramanujan wrote to G H Hardy having seen a copy of his 1910 book Orders of infinity. Hardy, together with Littlewood, studied the long list of unproved theorems which Ramanujan enclosed with his letter. Hardy wrote back to Ramanujan and evinced interest in his work. University of Madras gave Ramanujan a scholarship in May 1913 for two years and, in 1914, Hardy brought Ramanujan to Trinity College, Cambridge, to begin an extraordinary collaboration. Right from the start Ramanujan's collaboration with Hardy led to important results. In a joint paper with Hardy, Ramanujan gave an asymptotic formula for p(n). It had the remarkable property that it appeared to give the correct value of p(n), and this was later proved by Rademacher. Ramanujan had problems settling in London. He was an orthodox Brahmin and right from the beginning he had problems with his diet. The outbreak of World War I made obtaining special items of food harder and it was not long before Ramanujan had health problems.

On 16 March 1916 Ramanujan graduated from Cambridge with a Bachelor of Science by Research. He had been allowed to enroll in June 1914 despite not having the proper qualifications. Ramanujan's dissertation was on Highly composite numbers and consisted of seven of his papers published in England. Ramanujan fell seriously ill in 1917 and his doctors feared that he would die. He did improve a little by September but spent most of his time in various nursing homes. On February 18, 1918 Ramanujan was elected a fellow of the Cambridge Philosophical Society and later he was also elected as a fellow of the Royal Society of London. By the end of November 1918 Ramanujan's health had greatly improved. *Ramanujan sailed to India on 27 February 1919 arriving on 13 March. However his health was very poor and, despite medical treatment, he died on April 26, 1920.*
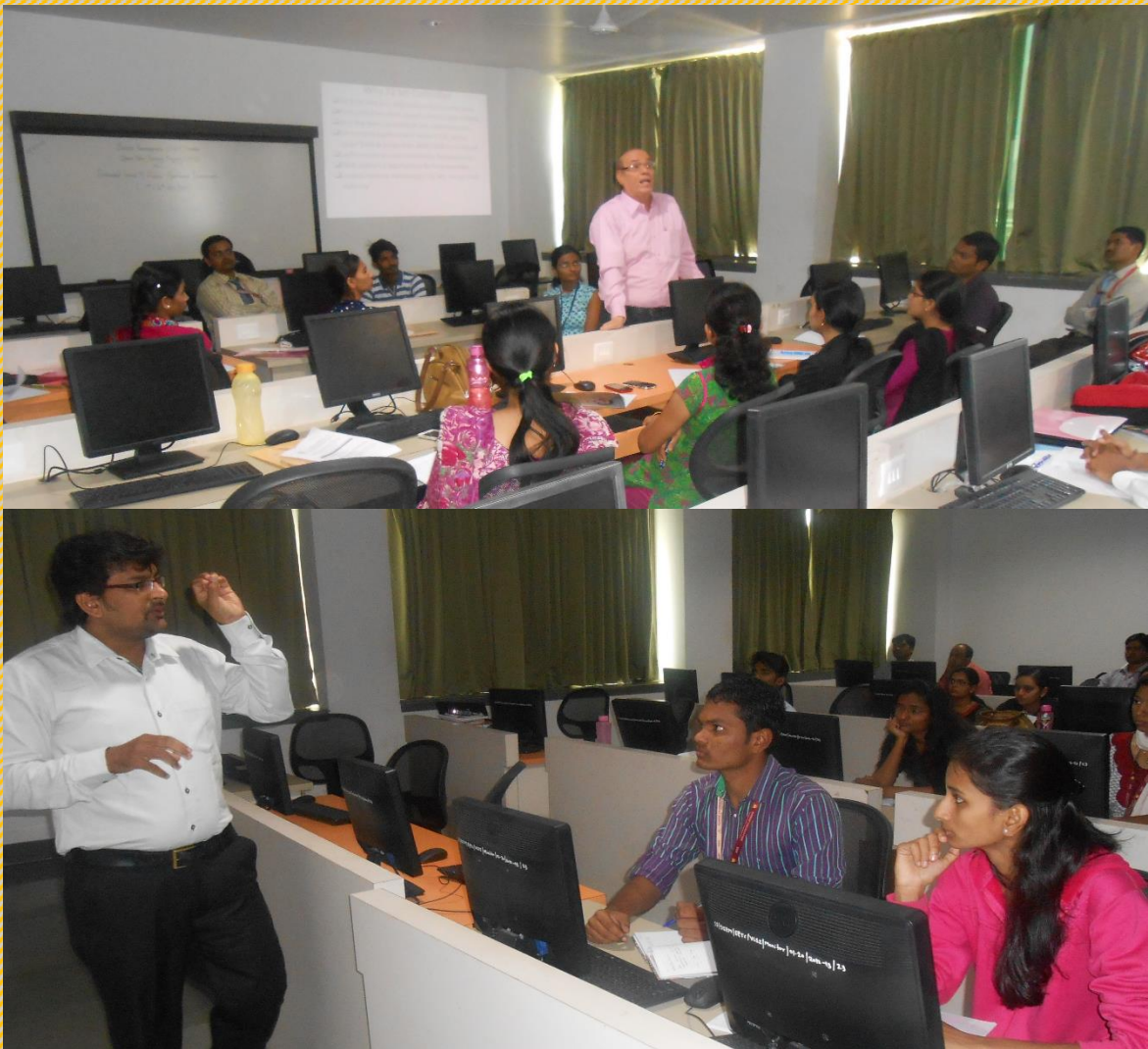
STTP on

"Embedded Linux & Android Application Development"

1st December to 5th December 2015

Prof. C.B. Joshi
(Asso. Prof. PVG COE, Pune)

Mr. Mangesh Adke
(Micro-embedded Tech., Pune)

Organized by
Department of E&TC Engg. & Department of Computer Engg.

Highlights of the Program

➤ Prof. C.B.Joshi guided the participants about the ARM 7 architecture & its interfacing.

➤ He discussed about the ARM 7 & ARM 9 processor applications.

➤ Mangesh Adke guided about Linux platform & Embedded Linux architecture.

➤ He had also shown the interfacing of ARM 9 board

A workshop on
'Advancement in Tribology'
18 December, 2015

Mr Vijay Vedmutha,
Managing Director, Bedmutha Industries

Organized by
Department of Mechanical Engineering

Highlights of the Program

- The Workshop was geared up towards upgrading the teaching faculty in Engineering and industrial practitioners.
- It was conducted, under the purview of IIM (Indian Institute of Metals, Pune Chapter) jointly with SIEM.
- The Guest emphasized the evolving role of engineering materials in future scenario.

2- Week training program on
'Effective Class Room Teaching'
8th -18th December, 2015

Highlights of the Program

- The session's objective was to upgrading the teaching faculty in Engineering
- It was conducted under the purview of ISTE of SIEM & SP.
- Prof D P Nathe, Joint Director, DTE, Regional Office, Nasik, was the Chief Guest of the inauguration function. He emphasized the evolving role of engineering teachers in coming times in his inaugural key note address.

A Seminar on
"INTERVIEW SKILLS FOR SUCCESSFUL PLAVEMENTS"
23 December, 2015

Mr. Sandeep Sankhala
General Manager (Marketing)
Rishabh Instruments Pvt. Ltd., Nashik

Prof. Piyush Desai
Dept. T&P Coordinator
Electrical Engg. Dept., SIEM

Organized by
Department of Electrical Engineering

Highlights of the Program

- Discussion about approach towards a placement session
- Preparations to be done before interviews
- Basic requirements searched by companies during placements
- Do's and Don'ts during an interview
- How to face the interviewer and body language

A Special Session on

Electrical Measuring Instruments & its Internal Design

22 December, 2015

Prof. Milind Tambat
Asst. Professor, Electrical Engineering, SIEM

Organized by
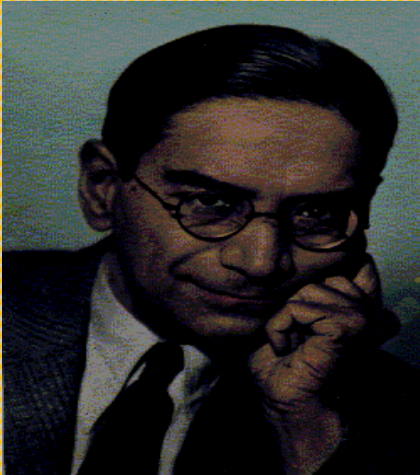## Department of Electrical Engineering

Highlights of the Program

- Discussion regarding principles of operation of various measuring instruments
- Moving Iron/ Moving Coil principles
- Various toques generated inside an analog instrument
- The internal components used in basic instruments
- The materials used in manufacturing of different measuring instruments
- Info about Analog & Digital Meters

'PROFESSOR', THE FOUNDER
Prasanta Chandra Mahalanobis
(29 June 1893 – 28 June 1972)

Contributed by Prof. Neetu M. Sharma

A Child of Renaissance

A biographer of Mahalanobis has described him as a 'Renaissance Man' and scientist. He could also be described as a child of renaissance. In spirit, if not quite in time, his roots may be traced to the Bengal Renaissance, a social and cultural awakening that shook the province of Bengal in nineteenth century India. Prasanta Chandra Mahalanobis's grandfather founded, with others, an organization called the Sadharan Brahmo Samaj, which was to become a torch-bearer of the Bengal Renaissance. His father, Prabodh Chandra, was an active member of this organization. His mother, Nirodbasini, belonged to a family of considerable academic achievements. Into this family, Prasanta Chandra was born on 29 June, 1893.

His Formal Education

Prasanta Chandra completed his schooling in Calcutta in 1908. In 1912, he graduated with honours in Physics from Presidency College, Calcutta. He went to England in 1913 and completed Tripos in Mathematics and Physics from King's College, Cambridge. In Part II of the Tripos, he was the only candidate to get a first class in Physics. King's College awarded him a senior research felllowship. Before starting his research, he came to Calcutta for a short vacation, but never returned to England. The war intervened. Also, he had found a teaching job and plenty of other interesting things to do in Calcutta.

His Early Statistical Work

Among his mentors in Calcutta was Acharya Brojendranath Seal, a philosopher and an encyclopaedist, who was also interested in Statistics. Seal was to have a lasting influence on Mahalanobis's life and work. In 1917, Seal, who held the Chair of Philosophy in Calcutta University, sought the help of Mahalanobis in analyzing examination results of the University. The results of statistical analyses of a portion of these data resulted in Mahalanobis's first paper on statistics entitled 'Anthropological Observations on Anglo-Indians of Calcutta, Part I: Male Stature', published in Records of the Indian Museum in 1922. This paper attracted the attention of Sir Gilbert Walker, Director General of Observatories, who requested Mahalanobis to undertake a systematic study of some metrological problems. This resulted in an important discovery by Mahalanobis that the region of highest control for changes in weather on the surface of the earth is located about 4 kilometers above sea-level. Subsequently, he was appointed Meteorologist in the Alipore Observatory and he held this post from 1922 to 1926.

In 1927, Mahalanobis spent a few months in Karl Pearson's laboratory in London, during which period he performed extensive statistical analyses of anthropometric data and closely examined Pearson's Coefficient of Racial Likeness (CRL) for measurement of biological affinities. He noted several shortcomings of the CRL and in 1930 published his seminal paper on the D-square statistic entitled 'Tests and Measures of Group Divergence'. Mahalanobis's interest in anthropometry remained strong and two large-scale anthropometric surveys were carried out under his direction in the United Provinces and Bengal. Based primarily on the D-square statistic, many of the important anthropological inferences drawn from the data collected in these surveys have stood the test of time.

Mahalanobis's contributions to large scale sample surveys are among his most significant and lasting gifts to statistics. He stared his work on sample surveys with estimation of area and yield of jute crop in Bengal in 1937. However, it was not easy for him to get these estimates accepted; controversy between him and the advocates of complete enumeration continued for over a decade. Ultimately he was able to demonstrate that estimates based on sample surveys were often more accurate than those based on complete enumeration, and that sample surveys could yield

estimates with small margins of error within a short time and at a smaller cost than complete enumeration. He was elected Chairman of the United Nations Sub-commission on Statistical Sampling in 1947, and held the post till 1951. His tireless advocacy of the usefulness of sample surveys resulted in the final recommendation of this sub-commission that sampling methods should be extended to all parts of the world. Mahalanobis received the Weldon Medal from Oxford University in 1944 and was elected a Fellow of the Royal Society, London, in 1945, for his fundamental contributions to Statistics, particularly in the area of large-scale sample surveys.

Mahalanobis believed that statistics should be an integral part of the dynamics of national planning. He was acutely aware of national problems and national resources. He took a keen interest and played a key role in formulating India's second five-year plan based on the four-sector model developed by him. Broad sectoral allocations of employment, capital investment and increment in national income were worked out and then split into detailed targets. Even though national planning seems to have now gone out of fashion, the need for planning in the initial stages of a nation's development is still acknowledged and Mahalanobis's contributions to Indian national planning continue to be held in high esteem by economists. During the last decade of his life, he devised a statistical method, fractile graphical analysis, for comparison of socio-economic conditions of groups of people. This technique has now been used in many other branches of science.

From the fledgling Statistical Laboratory formed in the early 1920s by Mahalanobis within the Physics department of Presidency College, he founded the Indian Statistical Institute on 17 December, 1931. He persuaded many bright young physicists and mathematicians to join the Institute. They included Raj Chandra Bose, Samarendra Nath Roy and C. Radhakrishna Rao. 'Professor', - as he was referred to by everyone in the Institute, - and his wife, Nirmalkumari, poured in all they possessed to establish the Institute on a firm footing. In 1959, by an act of the Indian Parliament, the Institute was declared as an 'Institution of National Importance'.

Mahalanobis and the Statistical System in India

Mahalanobis's role as a planner prompted him to play a pioneering role in the organized collection of official statistics. He established the National Sample Survey in 1950 with the objective of providing comprehensive statistics relating to all economic and social aspects on an all-India basis. He also helped in setting up of the Central Statistical Organization in India, an apex body for coordination of statistical activities in India. He was instrumental in the establishment of formal teaching of statistics in many Indian universities and also in the Indian Statistical Institute. Mahalanobis became the Honorary President of the International Statistical Institute in 1957, and was elected a fellow of the American Statistical Association in 1961. Throughout his career he received many other academic honours and awards. He received the highest national honour, Padma Vibhushan, from the President of India in 1968.

As a scientist Mahalanobis was, above all, a great applied statistician. Statistics was to be used for better understanding and reporting of scientific and engineering data and decision making for the welfare of the society. In Mahalanobis's work on prevention of floods, both aspects of statistics, namely, understanding and decision making, come together. On the other hand, in his pioneering work on anthropometric variation in India, it is the first aspect that dominates.

As a science organizer (and a thinker on organization of science), Mahalanobis was one of the very best of the twentieth century. The fact that Indian contributions to statistics have been so noteworthy is due to him, more than to anything else. In spite of being close to India's first prime minister, Jawaharlal Nehru, and many other national leaders, Mahalanobis was never a part of any establishment. He disliked all forms of bureaucracy in science. He was an organizer with vision who loved innovation and adventure and was ready to take risks.

Wildlife Snaps- Few Beautiful Avians

Contribution- Prof. Joydeep Sarkar

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