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the most of it in
19954. China's talented
artists5. Professor
Abdus Salam
turns 70 soonJanuary 26,
1996

PERSONALITY BY DR. ANIS ALAM

Not just a physicist

Professor Abdus Salam will turn 70 on January 29. But he will be celebrating his birthday away from home. After all, we haven't been kind to our Nobel hero

Abdus Salam, the greatest scientist that Pakistan has produced, will turn 70 on January 29, 1996. The professor has been very ill for some time, but unfortunately, very few in Pakistan know of his ill-health. In fact, we have not been very hospitable to our hero. His last public engagement in Lahore is nearly eight years ago when he delivered the Faiz memorial lecture to a packed hall of enthusiastic admirers. He was scheduled to arrive in Lahore in the February of 1993 but his sudden illness evented that. Salam brought fame and glory to Pakistan by winning the Nobel prize for physics in 1979.

A good biography of Abdus Salam has yet to be written in Urdu. One that appeared a few years back does not do justice to the many facets of Salam's colourful personality. Last year Penguin India beat Pakistan to it by bringing out a biography of Abdus Salam by UNESCO's Kalinga prize winner, Jagjit Singh. However, a more comprehensive attempt is needed.

It is a sad reflection on the obscurantism, bigotry, hypocrisy, sectarianism and intolerance of the times that an Urdu version of a collection of Salam's writing published in 1983, and reissued in several editions in many languages, did not see the light of day in Pakistan, until very recently.

Salam joins the list of giants like the English Newton who discovered the universal law of gravitation in the year 1687; the French Coulomb, who discovered the law between electric charges in the year 1770; the Japanese Yukawa who discovered the law governing the strong nuclear force in 1935, and the Italian Fermi who discovered the weak nuclear force.

Salam is one of those who have successfully made the first advance towards achieving Einstein's goal; unifying all forces of nature into a single one. Abdus Salam succeeded in unifying two of the four fundamental forces into one.

He was able to prove that the weak nuclear and the electromagnetic force are two manifestations of a single force, the electroweak force. Two American physicists Steven Weinberg and Sidney Glashow also arrived at the same conclusion independently. All three shared the Nobel prize for physics in 1979.

Salam, who hails from Jhang, has been a star from the very beginning. He secured the top position in every examination which he sat or between the years 1938 to 1946. In 1946, he proceeded on a scholarship to St. John's College, Cambridge, and obtained a double first in mathematics and physics in just three years. He then started his doctorate in theoretical physics. Right in the first year, he was awarded the prestigious Smith's prize for the most outstanding contribution to physics by a pre-doctoral student by the Cambridge University. He returned to Lahore to become the head of the mathematics department at Punjab University in 1951, a post which he continued to occupy till 1954. In 1952, he was awarded his doctorate by the Cambridge University for his important work in the renormalisation theory. In later years, he has been awarded honorary doctorates by as many as 36 universities from all over the globe. In 1957, he was appointed the founder professor of theoretical physics at the Imperial College of Science and Technology, London, at the young age of 31.

Abdus Salam has contributed to every major advance which has been made in the field of particle physics since 1950. He narrowly missed sharing the Nobel prize in 1957 for his theory of parity violation in weak interaction. His work on the symmetries in the late 50s and the early 60s also won him great fame.

Salam was awarded the Hopkins prize in 1955, the Adams prize again in 1958. He was the first recipient of the Maxwell Medal. In 1971, he was awarded the Oppenheimer medal and prize. In 1976, the London Institute of Physics awarded him the Guthrie medal and prize. In 1979, UNESCO bestowed on him the Einstein Medal. In 1983, he was awarded the Lomonosov Gold Medal by the USSR Academy of Sciences. Salam has been elected member of practically every science academy of any standing. These include the US, USSR, British, Italian, Swedish, Polish, Czechoslovakian, Indian and innumerable others on the five continents.

What, however, distinguishes Salam from most fellow scientists is his very strong feeling for humanity, best exemplified by the following lines from Omar Khayyam which he is very fond of quoting: Ah love! could thou and I with fate conspire To quash this sorry scheme of things entire would not we shatter it to bits — and then Remould it nearer to the heart's desire.

Throughout his working life, Salam has been driven by this desire to create a better world. Salam realised very early that the problems of poverty, disease, malnutrition, sanitation, hygiene, and of general under-development faced by the developing countries, including Pakistan, cannot be solved unless these countries become literate, acquire scientific knowledge and use it for economic development. He also realised early that if he has to make any impact he will have to persuade the people and the government in the developing world to understand the importance of science in the economic development. Once he became famous and began to be accorded respect and attention, he started using his considerable prestige and authority for the cause of education and science in the developing world. In 1955, he was appointed scientific secretary, to the first International Conference on Peaceful Uses of Atomic Energy, held in Geneva, Switzerland. This conference brought him in contact with a large number of professionals involved with economic development in various countries of the world including Pakistan. Three years later, he again acted in the same capacity at the Second Geneva Conference for the Peaceful Uses of Atomic Energy. Through the experience gained in these conferences he became fully convinced that the salvation of the developing countries lay in the acquisition of science. He therefore started his campaign to develop science in the developing countries.

In the beginning his efforts bore fruit in Pakistan. He was instrumental in setting up the Atomic Energy Commission of Pakistan. As member of the Commission, he was largely responsible for the training of scientists and engineers for the Commission for the next fifteen years. In 1959, he was appointed adviser to the Education Commission. The Commission strongly recommended the strengthening of science and engineering education. It recommended that institutions be set up to train at least seven thousand technicians a year. As a result of the Educational Commission's recommendations, several engineering and technical educational institutions were created. Special colleges were opened for improved science education at the post-school level. In the same year he was appointed member of the newly set-up Scientific Commission. The Commission in its report recommended the setting up of a number of new institutions to coordinate and organise scientific research in Pakistan. Salam was appointed the chief scientific adviser to the President of Pakistan in 1961. In this capacity, he was largely responsible for creating a network of scientific bodies and institutions in Pakistan. He was successful in creating the basic infrastructure for science and scientific research in Pakistan.

By the middle of the fourth decade after independence, Pakistan had a network of sixty organisations and two hundred experimental

stations engaged in scientific research in such diverse fields as space, atomic energy, agriculture, medicine, water resources and irrigation. Although Salam was fairly successful in persuading the Pakistan government to create a rudimentary network of scientific institutions, he still felt that more could be done. In his opinion, the size of the scientific community in Pakistan was far too small for a self-sustained growth. He has been helping individual Pakistani scientists sustain themselves as practising scientists through various means. He is, however, convinced of the necessity for an international centre where scientists from the developing world could interact with their colleagues from the developed scientific world.

The idea, when first floated at a meeting of the International Atomic Energy Commission in Geneva did not find favour with the bureaucrats. But Salam's persistence finally paid off. In 1964, an International Centre for Theoretical Physics was finally established at Trieste, a coastal Italian town on the northern Adriatic coast.

Salam established this centre under the auspices of the International Atomic Energy Agency (IAEA), United Nations Scientific and Cultural Organisation (UNESCO) and the Italian government. Since its inception in 1964, the centre has imparted training for research, and research experience to over forty thousand visiting scientists. Starting with a modest budget of \$350,000 in 1965, the centre now spends about \$20 million on its activities. In 1990, the centre welcomed nearly four thousand physicists and mathematicians from all over the world. The centre organises topical conferences, symposia, extended seminars, workshops, every year. It has strong resident groups of physicists, mathematicians, computer and micro electronics experts, who continue their research activities throughout the year. It also sponsors similar activities in developing countries.

When the US government announced an extremely ambitious programme for developing an anti-ballistic missile system in the early 80s, Salam anticipating a spurt in the arms race, joined a campaign with other prominent scientists to bring some sanity to this programme. This so-called Strategic Defence Initiative (SDI) was to cost almost \$500 billion dollars till the year 2000. Salam argued along with many other respected physicists about the fallacy of the very idea behind the Strategic Defence Initiative. As a result of the analysis and criticism by US scientists and Salam the SDI programme has been greatly curtailed in recent years.

Salam's efforts for world peace and global disarmament have



ABDUS SALAM: Shabbily treated by his own country

been widely recognised. In 1968, he was awarded the Atom for Peace medal and award. In 1981, he was awarded the Peace Medal by the Charles University, Prague. In 1986, he was awarded the Premio Umberto Biancamano medal and award by an Italian foundation. He has been a long serving member of the Stockholm International Peace Research Institute (SIPRI). It may be interesting to point out that Salam has used the considerable amounts from his various awards and prizes to establish funds and foundations for the advancement of science in the developing countries.

There have been a few men of science born in the Third World. The Indian subcontinent has produced three Nobel laureates besides a fair number of scientists who have made an impact in science in this century. Salam is perhaps the only one who has made a contribution at the most fundamental level of our understanding of the basic physical forces which have given rise to our universe and which keep it going. He is unique in another respect. He is proud of his Third World Pakistani origin. While keeping himself in the forefront of the international scientific community, he continues to draw sustenance from his philosophical, cultural and religious roots. He is a deeply religious man, who finds no contradiction between his scientific investigations and his religious beliefs.

Salam has been associated with science and higher education in Pakistan from the very beginning. He was chief scientific adviser to the President of Pakistan from 1961 to 1974; the founder chairman of the Pakistan Space and Upper Atmosphere Committee (SUPARCO) 1961-64; member, Pakistan Atomic Energy Commission from 1968 to 1974; member, National Science Council 1963-1975; member, Board of Pakistan Science Foundation 1973-77. He was awarded the Sitara-i-Pakistan and Pride of Performance medal and award in 1959. In 1979, he was awarded the highest civilian award the Nishan-i-Imtiaz. However, since 1975, his services have not been much utilised by Pakistani governments. It is a pity because any country in the world would be happy to have him as its most honoured citizen.

When he came to the Faiz Memorial lecture in February 1988, he got an extremely enthusiastic welcome. The audience listened with rapt attention to his explanation of our physical universe, its evolution, science in developing countries and in Pakistan. For him, the difference between the developed world and the developing world is not of wealth but of science and technology.

We need heroes and role models — especially in an age where long standing idols have toppled and giants have been found to have feet of clay, and where acknowledged leaders preach hatred, intolerance and violence in the name of religion. Wherever the truth is trampled upon, we need models of compassion, integrity, truthfulness and humanity. Salam's is one personality that should be held up for our youth to emulate. ■