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CSIR NEWS

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Team CSIR

CSIR Foundation Day

CSIR Celebrates Foundation Day

Seen on the dais during the CSIR Foundation Day Function at Hotel Ashok, New Delhi (*from right*) are: Shri Kapil Sibal, Minister of State for Science & Technology and Ocean Development; Shri Somnath Chatterjee, Speaker, Lok Sabha; and Dr R. A. Mashelkar, Director General, CSIR

TWENTY-SIXTH September is a very important day for the entire Council of Scientific & Industrial Research (CSIR); it was on this day in 1942 that CSIR was established. The day is celebrated by the entire CSIR family of 38 labs with great pomp and gaiety. It is a day for introspection — to take stock of the past year's progress, and plan for the future. It is also a day for recognizing excellence through various awards.

The CSIR Foundation Day main function this year was held at the Hotel Ashok, New Delhi. It was attended by a host of dignitaries from different walks of life in addition to members of the CSIR family. It was an affirmation of CSIR's belief in progress through partnerships at all levels — local, national and global.

Shri Somnath Chatterjee, Speaker, Lok Sabha, was the Chief Guest. Shri Kapil Sibal, Minister of State (Independent charge), Science & Technology and Ocean Development and Vice President, CSIR, presided over the function. Dr Swati Piramal, Director, Strategic Alliances & Communications, Nicholas Piramal India Limited, delivered the CSIR Foundation Day Lecture, titled 'Kurukshetra, Science and Transformation: Two forces that reshape the world'.

Dr R. A. Mashelkar, Director General, CSIR, extended a warm welcome to the distinguished invitees and guests.

The prestigious CSIR Young Scientist Awards and CSIR Technology Awards were presented, and names of winners of the CSIR Diamond Jubilee Invention Awards for School Children for 2005 were announced. A book on Materials Science by Dr Lakshmi Kumar, National Physical Laboratory (NPL), New Delhi, was also released on the occasion.

Address by Shri Somnath Chatterjee, Hon'ble Speaker, Lok Sabha

SHRI Kapil Sibal, Honourable Minister of State for Science & Technology and Ocean Development; Dr R.A. Mashelkar, Director-General, Council of Scientific and Industrial Research (CSIR); Members of the CSIR Family; Distinguished Scientists; and Ladies and Gentlemen:

Shri Somnath Chatterjee, Speaker, Lok Sabha delivering his address

It is a matter of privilege and an honour for me to be here with you and to associate with the Foundation Day Celebrations of the Council of Scientific and Industrial Research (CSIR). Let me extend my best wishes to the entire CSIR fraternity on this happy and auspicious occasion.

There is great appreciation in the country of the positive and pro-people work being done by the CSIR over the decades. In a developing country like ours, the scientific community has a very important role to play. Indeed the multifarious initiatives that the CSIR has taken to see that the fruits of science and technology are available for the benefit of the average Indian have been impressive. CSIR is known to be using advancements in science and technology to meet the basic human needs relating to food, health, water, energy, employment and shelter, amongst others. It has made commendable achievements in several fields, starting from agriculture to space research, and made a mark as an organization driven by pursuit of excellence and an urge to contribute to the process of nation-building.

We must realise that our multifarious socio-economic problems can be effectively addressed only through scientific, technological and industrial progress. We all aspire for the transformation of India on modern scientific lines, extending the benefits of education and health-care to all. Pt. Jawaharlal Nehru always laid great emphasis on developing a scientific temper among Indians and underscored the importance of science and technology in the task of nation-building and in establishing an egalitarian and rational society.

Our scientists are exploring the heights of space and the depths of the oceans. India is now one of the leading nations in developing and using space technology for the benefit of humanity. Our Ocean scientists have been making enormous strides in harnessing gas hydrates, a vast energy resource in the ocean bed. The results of our R&D in the medical and pharmaceuticals fields are also attracting global attention. Indian companies are providing low-cost drugs to fight HIV/ AIDS in Africa. CSIR's successes in developing affordable drugs for the poor and for the treatment of tropical diseases such as Malaria, are particularly commendable. We are matching global standards of excellence in the frontier area of biotechnology. The spirit of innovation and excellence is now spreading to many new areas. Undoubtedly, India's most remarkable success in recent years has been in the field of Information Technology. The success lies not only in the steadily rising software exports but also in the growing opportunities in outsourcing of services. Every area of India's socio-economic development today bears the signature of Indian science

and technology in some form or the other. These achievements, however, should not make us complacent. There are still numerous challenges to be addressed by our scientific community for the country. Natural calamities like the Tsunami in the Indian Ocean in December last year; the Typhoon, which hit Japan recently and the Hurricanes which affected the United States badly, have exposed the vulnerability of mankind in the face of nature's fury. Our scientists and technologists must make constant and vigorous efforts to study these phenomena more intensely so that effective early warning systems can be developed, thereby minimising destruction and human suffering. As we, in India, regularly face the problems of floods, cyclones and droughts, some effective system of management of these disasters needs to be developed to increase our preparedness and for effectively handling the post-disaster problems. Only when the development in these areas, which are crucial for the very survival of people in different parts of the country, who become victims of natural disasters, can we say that science is making a difference to the lives of the people.

First and foremost, our scientific community has to strive more for solving the problems afflicting our country, like lack of availability of safe drinking water, food, health, education and housing. For example, acute scarcity of clean water has assumed grave proportions in many parts of the country. I would like to urge our Scientific and Technology establishment to develop low cost technologies for water conservation and recycling. We also need to make efforts to find ways of making desalination of seawater more economically viable.

Bad monsoons have been forcing a number of farmers to even take their lives in desperation. Scientists working in the field of agriculture may carry out intensive research in the field of dry land farming and for developing more high yielding variety of seeds so that our farmers do not remain totally dependent on the monsoons and the vagaries of the weather. We need to introduce science and technology inputs in our agriculture, cottage and small-scale industries as well as services in the informal sector. By making these economic activities more productive and profitable, we can unleash their enormous potential for employment generation.

TKDL makes Global Headlines

THAT the Traditional Knowledge Digital Library (TKDL) is making its presence felt globally is reflected in the major news stories carried by both the Washington Times (23/09/2005) and the London Sunday Telegraph (18/09/2005).

TKDL is a prestigious collaborative project between the National Institute of Science Communication and Information Resources (NISCAIR), New Delhi and the Department of Indian Systems of Medicine and Homoeopathy, Ministry of Health and Family Welfare, India. The TKDL database contains details of thousands of herbal treatments drawn from age-old health systems. So far, 10 million of an estimated 30 million pages of texts in Sanskrit, Arabic and Persian have been translated and entered into the digital library. TKDL-YOGA is a part of the larger project to document all sources of traditional Indian knowledge. In an effort to protect India's heritage, task force has begun documenting 1,500 yoga postures drawn from classical yoga texts – including the writings of the Indian sage Patanjali, the first man to codify the art of yoga. The data is being stored in a digital library whose computerized contents will soon be made available to patents offices worldwide.

Foreign practitioners are already said to have claimed hundreds of patents and copyrights on poses and techniques lifted straight from classical Indian yoga treatises. Indians based in America, Where yoga has become a $30 billion-a-year business- a growth fueled by celebrity adherents, have been quick off the mark to exploit this resource. The US patent and Trademark Office has issued 134 patents on yoga accessories, 150 yoga-related copyrights and 2,315 yoga trademarks, says the Indian task force. It also says that


The Washington Times

Judiciary Committee approves Roberts

Enough support gained to avoid Senate filibuster

India makes moves to reclaim heritage from 'yoga piracy'

by David Orr
LONDON SUNDAY TELEGRAPH
September 23, 2005

NEW DELHI– The Indian government is furious that yoga practices dating back thousands of years are being "stolen" by gurus and fitness instructors in Europe and the United States.

Foreign practitioners are already said to have claimed hundreds of patents and copyrights on poses and techniques lifted straight from classical Indian yoga treatises.

"Yoga piracy is becoming very common, and we are moving to do something about it," says Vinod Gupta, the head of a recently established Indian government task force on traditional knowledge and intellectual-property theft.

"We know of at least 150 asanas [yoga positions] that have been pirated in the U.S., the UK, Germany and Japan," he says. "These were developed in India long ago and no one can claim them as their own."

In an effort to protect India's heritage, the task force has begun documenting 1,500 yoga postures drawn from classical yoga texts – including the writings of the Indian sage, Patanjali, the first man to codify the art of yoga. The data is being stored in a digital library whose computerized contents will soon be made available to patent offices worldwide.

Families of troops counter Sheehan

India makes moves from 'yoga piracy'

EU powers delay sanctioning Iran, offer weaker draft

Britain has approved at least 10 trademarks relating to yoga training aids that are mentioned in ancient texts. 'Yoga piracy is becoming very common, and we are moving to do something about it,' says Shri Vinod K. Gupta, Director, NISCAIR and the Head of a recently established Indian government task force on traditional knowledge and intellectual-property theft. 'We know of at least 150 asanas that have been pirated in the US, the UK, Germany and Japan.... These were developed in India long ago and no one can claim them as their own.' 'No one should be able to claim ownership of these traditional postures,' says Shri Gupta. 'The information has been in the public domain in India for thousands of years. But, until now, it has only been available in languages which people in the outside world cannot understand.' Special computer software has been developed to translate the ancient texts into English, French, German, Spanish and Japanese.

We must make efforts to develop technology to herald an era of progress and prosperity while preserving our environment. Our natural resources are limited and ecological biodiversity hangs on a delicate balance. Thus, while on the one hand we have to limit our exploitation of our natural resources, on the other, we have to develop eco-friendly and viable technologies. The efforts to make use of our access to solar and wind energy have only partially succeeded. Solar energy is one area where, I feel, more research should be carried out to make it more affordable and consumer friendly. Studies have shown that if we can develop just one per cent of solar potential we would be able to produce 20 times the energy derived from conventional sources. Similarly, India's wind energy potential is estimated to be between 30,000 and 50,000 MW. In tapping these sources and thereby addressing one of our major developmental concerns, organizations like the CSIR can play a vital role.

The challenges before Indian science are manifold. There is an enormous unutilised potential of our people, which can be used for transforming India into an economic powerhouse. This will be achieved only when all our people are fully empowered, socially, and economically, utilising the benefit of modern science and technology, including IT in the different areas of the country.

Pandit Jawaharlal Nehru once said: "It is an inherent obligation of a great country like India with its tradition of scholarship and original thinking, and its great cultural heritage, to participate fully in the march of science, which is probably mankind's greatest enterprise today." We have the human capital and the will to realize this vision. We have to go beyond just participation in the march of science. We must perceive science as a social movement. Indian science must strive for excellence. We also need to make scientific research in our country more and more application-based.

There is also a need to bring together the members of the Parliament, legislators and the general public face-to-face with our scientists. Members of Parliament can be invited by CSIR to periodically visit their national laboratories and understand both the processes and products of science. Such exposure and interaction will help the Members

of Parliament as well as the various Parliamentary Standing Committees in promoting a very healthy relationship between the Parliament and our scientific community. There is no developed country in the world where Indian scientists have not made a mark in their core areas of scientific research. They need to replicate that role with even more enthusiasm for our country also. Achievements of science are for the whole humanity, not for a privileged few. As an eminent scientist once observed, "a scientist belongs to the whole humanity in times of peace and to his country, in times of war."

We are almost into the seventh decade of freedom. Yet we are still heavily dependent on other countries for our major defence equipments, for quality aircrafts, and for several other important items. It should be our national priority to have world-class research institutions that can effectively address our country-specific requirements. As a learned analyst observed, "our institutions are still busy solving the problems of the developed West", as most of our best talents find themselves more relevant for the requirements of those countries. Why is it so? One of the reasons, to my mind, is that we do not give sufficient attention to the importance of quality research in our institutions of learning and our scientific establishments. We must recognise that scientific progress in the country and social progress as such can be achieved only through intensive research and also much wider research facilities in different areas of science and technology. We cannot ignore the fact that research facilities are still inadequate for a country with such great potential as ours. It is essential to have a national commitment to provide more research centres and fully equipped laboratories with adequate provision for funds.

Friends, whatever investment is made in science and technology, if properly utilised, will ultimately result in the achievement of a self-reliant, knowledge-based society. Science has to be guided by empirical standards, reason and logic. We cannot afford to waste our limited resources for confusing science with mythology and faith with reason. Scientists are the primary agents through whom the traditional societies are transformed into modern ones. It is for the political leadership to facilitate this transformation. The other day, I read a touching story about how a very poor Indian village boy struggled to come up in life, taking the benefit of education, which was otherwise beyond his reach, with the help of others. Yet by his persistent endeavour and supported by well-meaning and visionary people, he obtained quality higher education and came up to occupy a crucial position in the scientific establishment of his country. He was among those who had migrated to the West in search of greater challenges and better opportunities for research or to quote him, "in search of walls to paint," but returned to the motherland when shown the right opportunity to excel and contribute to our own nation-building. By now you will be knowing whom I am talking about.

A view of the audience

He is none other than your Director General, Dr Mashelkar. To my scientist-friends here I would like to remind that first and foremost start looking for solid walls within the country to paint on, to make an impact, to contribute to our own scientific growth. If every student of science gets proper guidance and encouragement and opportunities, as Dr Mashelkar has shown, and is driven by an urge to excel and to contribute to the national wealth, we will be able to transform every institution of learning and research into world-class ones, which can attract and accommodate all our talents and utilise them in the service of our country. I would like to visualise the CSIR taking the lead role and becoming a catalyst in this endeavour to provide walls to all to paint. I am sure, our scientists, under the able leadership of the dynamic Minister, will take on this challenge and become effective agents in the gigantic task of transforming India into a knowledge-driven, modern, developed country. I would once again like to thank Shri Kapil Sibal, Dr Mashelkar and the CSIR Community for giving me the opportunity to associate with your Foundation Day Celebrations. I extend my best wishes to all of you.

Before I conclude, let me take this opportunity to also extend my hearty congratulations to all those scientists who are being honoured for their excellence in science and technology. I wish you all the very best.

Thank you.

Address by Shri Kapil Sibal, Minister of State for Science & Technology and Ocean Development

Shri Kapil Sibal, Minister of State for Science & Technology and Ocean Development, delivering his address

WE are indeed honoured to have with us today the Honorable Speaker of the Lok Sabha, Shri Somnath Chatterjee to preside on this Foundation Day Function of the CSIR. His presence signifies the importance that the highest dignitaries of State attach to the work of the scientific community in nation building. We have perhaps over the years lost out on the connectivity between science and technology and policy making. We have somewhere forgotten the message of Pt. Jawaharlal Nehru when he said "the way to the future is to make friends with science". Recent debates in Parliament are not imbued with the kind of scientific temper, which alone will contribute to making policy makers aware of the enormous opportunities that science provides in chartering the future of India in a globalised world.

There is an erroneous perception that science must remain in the domain of the scientists and that access to science is a journey into a world of mysteries, beyond the grasp of the common man. It is time to

remember what Bertrand Russell once said, "Science is what you know. Philosophy is what you do not know." Let us together attempt to gain access to what we know than being philosophical about it. Science is, in fact, the systematic classification of experience and in that sense is akin to politics. It is time for the legislator to understand scientific experience and what it means for the common man of this country and for the politics of tomorrow. In that sense to have speaker of the Lok Sabha with us today, we have an opportunity to showcase what a premier autonomous scientific institution has done since it was founded and what it proposes to do for tomorrow. This will enable us to bring science closer to those who are responsible for chartering the course our nation should adopt to be counted in the comity of nations in the 21 century.

I am also delighted to have with us today Ms. Swati Piramal and Ms. Mallika Sarabhai and her troupe. The culture of science is truly an art and the way Swati has crafted it in the functioning of Nicholas Piramal demonstrates the importance of developing a scientific culture in setting up and working a world class enterprise. Mallika brings to us the message that science is closely associated with art and that scientific choreography is the only way to conquer future challenges. I am reminded of what Max Born, the German Physicist who won the Noble Prize in 1954 said and I quote, "Science is not formal logic - it needs free play of the mind in as great a degree as in other creative art". It is true that this is a gift, which can hardly be taught but its growth can be encouraged in those who already possess it. Scientific discoveries in the past required a free play of the mind. Creating new knowledge is like any other act of creativity. Having brought together on one platform persons from the arts, science, industry, law and legislature a truly cross cultural mingling of the best minds, CSIR has demonstrated that creativity requires a multi-dimensional approach and inputs whether in legislative matters or for technology development.

The exhibition that CSIR has put up is impressive. It demonstrates the diversity of CSIR outputs,which contribute to enrichening the life of our people. Also, the achievements, of the awardees are truly revealing. I congratulate each one of them. All these point to the fact that CSIR has been 'reaching for greater heights' of performance across a wide spectrum of activities with a passion for success. Today, we live in an age where science and technology have become an important determinant of prestige, power and wealth. Therefore it is all the more important that CSIR contribute its mite to realize the dream of our President of making India a developed nation by 2020.

Let us take stock of where we stand today. The Indian economy is growing annually at an unprecedented rate undeterred by forces external and internal which attempt to inhibit growth. We have vast foreign exchange reserves of around $144 billion. The capital markets are soaring. FDI is doubling every year. On the economic front, we have done very well.

India is young. More than half of our population, which exceeds the combined population of USA and European Union is below the age of 25 years. With the vast expansion in the educational system, over 10 million students are enrolled in universities. This has given rise to a burgeoning pool of highly qualified and talented young people. A vast bank of professionally qualified and experienced Indian Diaspora is available on tap. There is also a visible reversal of brain drain, many expatriates are returning back to 'paint on a wider Indian canvas with colours of their making.'

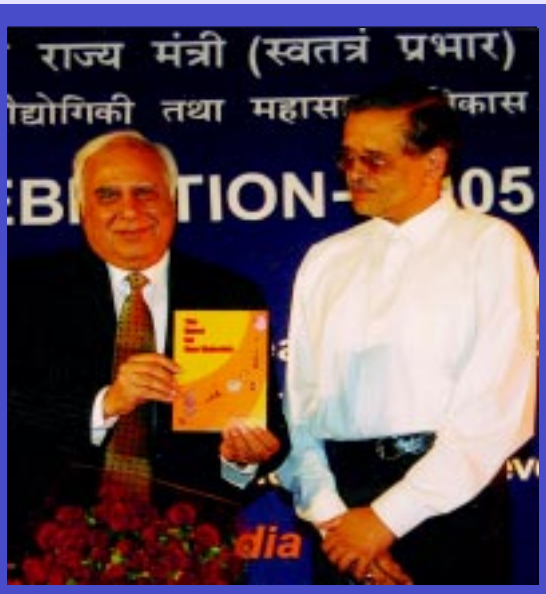
A phenomenal transformation in the attitude and approach to R&D in industry has taken place. From a 'back seat' position a mere ten years ago, R&D in Indian industry is now in the 'front seat' of corporate strategy. In several sectors, business driven research has given way to research driven business.

The competent S&T human resource base built up over the years is now attracting global companies to set-up their R&D in India. There are today R&D and technical centres of over 150 leading MNCs located in India, be these by such companies as GE or Intel or IBM or Lucent or Pfizer. Together, these companies employ over 50,000 scientists and technologists or about half of the S&T workforce in the national sector. With the rapid growth in their numbers and near

stagnation in the expansion of the national R&D soon they would be rivaling the national R&D itself! This augurs well for it means competition for the best Indian brains in India. This will help raise the 'quality and standards' of our R&D across the board. Thus we are at a juncture when the confidence of the nation to be a significant player in the comity of nations is at an all time high. The nation thus looks up to the CSIR to help bring all the benefits that S&T can bestow to the people of India and for it to attain a position of prestige, influence and power in the world. On its part, the Government has been empowering the CSIR through massive infra-structural support. A modern world class Central Drug Research Institute (CDRI) is now coming up at a new location in Lucknow; National Institute of Oceanography (NIO) has been without a research vessel of its own for more than a decade. Recently the Cabinet cleared the proposal for acquiring an oceanographic research vessel costing around Rs 200 crores. There are several such examples of ongoing government support.

1 believe that with all the goodwill and support that the CSIR has today, it should forge ahead boldly with its programmes that, firstly apply the great prowess of science to meet the basic human needs of our people, secondly generate research scientists in cross disciplinary sunrise areas of S&T, thirdly to build up competence, capability and technology options in the emerging areas of biotechnology, nano technology, new materials and IT and fourthly, partner with Indian industry both small and big to enable it to compete globally. Any scientific endeavour must benefit society. The good of the common man is at the heart of scientific progress. Science is the largest societal benefactor. While we dream to discover the galaxies and embark on scientific adventures we must never lose sight of the reality of this world, the poor, the underprivileged and those who have been denied the fruits of the knowledge economy. We must provide clean drinking water for our people for a healthy life in an environment free from pestilence and disease. Every child is entitled to grow up with hope and expectations. Equality of opportunity, the underlying theme of our constitutional framework, can only be brought about if societal issues are addressed by scientific minds and implemented with technologies which are both accessible and affordable. The world of science is not isolated from the humdrum of everyday life. Unless we embrace science, science cannot provide the solutions for us to embrace. Every nation must recognize that and set up vehicles like the CSIR to achieve that objective. This is our vision for today.

I am proud to say that this flagship of ours, CSIR, has at its helm a man who has done us proud. He is a renowned scientist, nationalist to the core and brings laurels for his country whenever he steps out of India. The foundation of an institution is not a one activity but a continuing process, which enables the institution to face the challenges of the future. To do this, we need a man with vision to mould such institutions. Dr. Mashelkar is a man of such vision. I am sure under his leadership CSIR has a glorious future. I wish the CSIR Family, of which I am now a permanent member, a very fulfilling Birthday.



Shri Kapil Sibal releasing a book entitled 'Materials Science' authored by Dr Lakshmi Kumar (*right*) NPL, New Delhi.

CSIR Foundation Day Lecture

Kurukshetra, Science and Transformation: Two forces that reshape the world

by Dr Swati Piramal, Director, Strategic Alliances & Communications
Nicholas Piramal India Limited

Dr Swati Piramal, Director, Strategic Alliances & Communications, Nicholas Piramal India Limited, delivering the CSIR Foundation Day Lecture

SHRI Somnath Chatterjee, Shri Kapil Sibal, Dr R. A. Mashelkar, friends, fellow scientists, I am going to speak this evening on a strange subject, called Kurukshetra, Science and Transformation: Two forces that reshape the world.

Ladies and gentlemen, there is always a battlefield. In today's talk I want to talk about Kurukshetra, a metaphor of a battle without which there is no progress, the journeys and the elixir; transformation and the gift; the science renaissance of India. Today I am going to use story telling, music, theatre by noted Bollywood actor Tom Alter, and a world famous Flamenco artist from Spain. In daily life there is a downward spiral and we find much to blame and criticize. Scientists are not unique. This happens to us too. To succeed we need a perfect optimism—an upward spiral.

Edwin Arnold was a British poet in the year 1885 and he came to India and he wrote a poetic translation of the Bhagawat Gita and a young lawyer called Mohandas Gandhi read it when he was studying law in England. Gandhi was captivated for life by this translation of the Gita's message and much of his work on non-violence was really based on this epic. Today you will hear many of Edwin Arnold's poetic translations. The Gita opens magnificently. Two armies arrayed ready to battle on the ancestral fields of Kuru, pennants flapping in the breeze and horses pawing the grounds impatiently. As the conch shells signal the beginning of the battle and as the army is about to whirl themselves on each other, Arjun has doubts about the bloody deeds he is on the verge of perpetrating—the slaying of his kinsmen, teachers, friends and he puts down his bow and refuses to fight. Krishna then gives his unique philosophy. Arjun throws down his great Gandiv and says, "I will not fight." Krishna says, "It does not become you to yield to this weakness. Arise with a brave heart and destroy the enemy."

Ladies and gentlemen, the downwards spiral happens everyday in our house, in our lives. There is hatred, depression, anger, severe competition, denigration, disbelief, sorrow, and fear. When the great Albert Einstein read the Bhagawat Gita he said, "I ask myself how God created the Universe; every thing appears to be superfluous."

"You are obliged to act," said Lord Krishna to Arjun, even to maintain your body. Fulfill all your duties. Action is better than inaction."

"This is model done by the great Professor Sumantra Ghoshal. Leadership in action means four things. A call to adventure; Crossing the Threshold; the Supreme ordeal of Kurukshetra with the helpers; and finally the Elixir—the gift of transformation. I believe this is what our great science needs and follows.

Prepare to journey

Napoleon said. "The work is my element. I was born and made for work." I know the limit of my legs. I know the limits of my eyes. But I do not know those of my work. The story of Steven Jobs is inspirational. He was an abandoned child. He was hungry and poor. He used to eat at the Hare Krishna temple at San Francisco to get a square meal once a week. He was thrown out of the company that he had built. And as a young man he battled cancer. But Apple reinvented itself despite enormous odds. Jobs saved his rotting Apple. He was fired, he was rehired …he had plummeting top and bottom lines. He battled multiple competition, an antagonistic music industry, egos of board members, and the limits of technology. But he succeeded despite adversity. Today the top MP3 player, the great iPod –and I believe a new one, which even uses nanotechnology is going to be released this week. He reinvented Apple as a digital lifestyle. It is important, therefore to see the world as full of possibility, to shift our world-view from one of resignation to one of possibility.

The story of Dolly is another inspiration. I happened to meet Ian Wilmut in Davos, Switzerland and he told me how Dolly was born in 1997. Dire predictions were made. They said she would be sterile. That it would be a regiment of Hitler's, said the German magazine Der Speigel. But Dolly had a baby called Bonnie. So she wasn't sterile. And later on the sheep called Tracy had the most valuable milk in the world because she produced alpha –1 antitrypsin –a method of production called pharming. The subsidiary PPL tied up with Bayer but in 2005 disaster struck. Bayer stopped its funding and PPL announced that it may have to destroy all the cloned sheep. And through that Kurukshetra, PPL was rising again, announcing the transplantation from pigs of human organs!

The second part is Crossing the threshold: 11 January 49 BC, Northern Italy, Julius Caesar was the Governor of Gaul and Pompey ruled Rome. The river Rubicon separated Gaul from the Roman heartland. Caesar decided to cross the Rubicon with his army and declared civil war against Pompey. "And yet, friends," he said, "we are able to turn back, but once we pass over this little bridge there will be no turning back." He snatched a trumpet, led forth to the river and beginning with a mighty blast of the sound of battle, forged ahead to the other bank. He said, " Let us march on, and whatever the tokens of the Gods and the provocations of our enemies call us, the die is cast." All of us, whether or not we are warriors, have a cubic centimetre of chance that pops out in front of our eyes from time to time. The difference between an average man and a warrior is that the warrior is aware of it. And one of his tasks is to be alert. Deliberately waiting, so that when this cubic centimetre of chance pops out he has the necessary speed and the prowess to pick it up. So you have to, (repeat) have to, cross the Rubicon!

The third part is the Hero's journey. President Kalam came to our research centre and he said, "The bumblebee by every known aeronautical engine design should not fly. But it flies. It flies! And I believe each scientist will be able to fly and take on the world." And he really, for himself, has proved that when he launched Agni.

Ramanujan. He was elected a Fellow of Cambridge Society, the Royal Society of London and the Trinity College at Cambridge. He died in 1920 at the young age of thirty-two. After he died some thirty papers were published on his work. He was a poor, young clerk in Chennai. And yet he had to undergo this Hero's journey sailing on a ship to go to Trinity College where Hardy and Littlewood were his bosses. Every time he showed them a mathematical theorem, Ramanujan said, "the new ideas, the original ideas," so exasperated were they that they said, "Ramanujan does not think like a European. He thinks like an Indian." That's the message of Ramanujan.

Genentech was built on a foundation of innovation and tenacity that allowed it to survive its first battle, mass-producing human insulin. The co-founders set ambitious goals. But never before had a human being taken a recombinant drug made from cells. They had to battle on multiple fronts. Budget. Regulators did not know they were talking about. Intellectual property. Could you file a patent on a gene? Partners. They succeeded despite all adversities. They were first to mass-produce

human insulin and they ignited the biotech revolution.

The fourth part is the Gift. You are what your deep driving desire is. As your desire is, so is your will. As your will is, so is your deed. As your deed is, so is your destiny. Fate is not written in the palm of your hand or the astrological chart. It is because you have a deep driving desire, only then can that become your destiny. Gandhiji exemplified this. "The honour of India, " he said," has been symbolised by a fistful of salt in the hands of a man of non-violence. The fist, which held the salt may be broken but it will not yield up its salt."

"Seville, Spain. There was the Spanish Inquisition." There was a prisoner. "When other prisoners attacked him, he said, "I am a poet." The prisoners wanted to burn his manuscript. They said, "We will take you to a trial." "Before you do that, enter my imagination." There was a young man called Alonzo—he becomes a knight. The knight's name was Don Quixote La Mancha. He had one thing very important. He had an impossible dream. "

"With your thoughts you can create the world. So attaining victory in the battlefield of your life is really crucial. Just in case you thought that all this was theory, I will illustrate it with some of our examples at Nicholas Piramal.

They said liberalisation in the nineties would mean that Indian companies would be swallowed up. Then Dr Manmohan Singh had this great vision of a new India. What really happened? Instead, Nicholas took over five multinational subsidiaries in India and became a multinational itself with sales in over sixty countries, with partnerships that prospered with some of the greatest names in the pharmaceuticals industry. They said Indian manufacturing would be beaten by the Chinese producing technology, long-range partnerships, keeping the top regulations of the world. As Sherlock Holmes said, it was a "three pipe problem." But Nicholas had the best in-glass manufacturing capabilities and the US FDA was satisfied and found no real mistakes in the whole plant.

They said Indian studies would never be accepted by the regulatory authorities. The stuff done in India, that was poor quality. We started a CRO that was accredited by foreign regulators in UK, Brazil and Israel and we are doing studies for countries around the world.

They said India would be supplier of low-end chemicals. That's it! The bottom of the table. India's chemistry skills became like an Aladdin- lamp of chemistry for the world and unleashed its genie of outsourcing. And Nicholas aimed to be the partner of choice for international Pharma companies. In custom synthesis, in the last few weeks all these companies have come to us not just to give us a contract but to sign an alliance and a research collaboration with respect about our intellectual property.

If we put India and China together, we have a new equation. My scientists are in China to find where we could collaborate with this great country as well. In the meantime the US gets the shivers as Asian tigers roar.

In drug discovery and development processes we believe in alliances. We have some of the best alliances with CSIR and we launched our own malarial molecule discovered by the CDRI, in Lucknow some years ago. They said how does India hope to reshape the world drug industry? Two years ago the Financial Times in London, quoted me as saying, we are going to make a new drug for fifty million dollars something that costs 1.2 billion dollars worldwide. Everybody laughed. Worldwide, they said it couldn't be done, that is impossible. But then at Nicholas Piramal we set a new paradigm.

We want to beat the target of fifty million dollars. It means better access of medicine for people at the bottom of the pyramid. Today if the cost of any drug is one billion dollars it reaches only the top one percent of six billion people worldwide. The lower cost will ultimately lower the cost of drugs with a better reach. And price into volume will be enough to plough back money into research. We have a strong belief in Intellectual Property. We have earned the right to do research.

I want to tell you about our Kurukshetras. We had a fire so big that it destroyed every computer in our old building. But within one year we were up and running with a brand new facility. Value Added Tax meant a great deal of problems. Chemists across India down stocked the goods. Every company had to cut research funding because this

had such a great impact. MRP – based excise was another difficulty where we had to increase prices to pay taxes But yet we had to create share holder value. And last year our compounded returns were 79 per cent. They said that with IP no company would be able to compete with billions of dollars of research funding. But we have filed global patents for oncology worldwide and last month for the first time, a drug discovered in India, Canadian citizens were using our drug, which was discovered here, in a clinical trial. In fact with technology, with low cost, high quality and speed, Ladies and Gentlemen, we are about to take off like a rocket.

The Nicholas Piramal Research Centre that President Kalam opened is a demonstration of our belief in what he called, "a developed India." We had our own Kurukshetra last month when the floods hit Bombay (Mumbai) and all our cell lines died because we had no power on the days we had that deluge. But within a few days we boldly stood up and in a show of strength, it was business as usual. Our oncology candidate entered Phase 1 and we also signed a biosynthetic deal in Canada. The Economist came to visit our Centre after the deluge and they said, "Well, this place is amazing." They called it "the next big thing."

I want to tell you a little bit about one big Kurukshetra we had just a few months ago. An employee was arrested by the Narcotics Bureau (on charges) that he was extracting codeine and then transporting it to Bangladesh across the border. Now it turns out that we found a company that believes in ethics and values suddenly accused of drug trafficking, supporting insurgency in the North east. It was amazing!

I knew scientifically once you mix codeine with three other drugs it is very difficult to extract. Every chemist in the audience will know that you will need a distillation column. And so I went to Shri Kapil Sibal and explained to him the problem. With his legal acumen and his extraordinary grasp of science he was able to help us. Dr Mashelkar and his colleague, Dr Sivaram from NCL, Pune, where the technology of codeine was first devised, helped us. The learned court in Ahmedabad then accepted our point of view and ruled that certainly you cannot extract codeine from a cough syrup.

We make medicines. We do not do drug trafficking. We don't fund counter-insurgency. That's not our job. Our job is for the betterment of the people. And I would like to publicly thank CSIR for this great help they gave us. For me it really meant a victory over ignorance. A victory of science. We have to fight. Because that is what every scientist in India has to do. We have to fight for our victory too. Dr Abdul Kalam had come to open our research centre in September last year and he said, "Eat my brain, remove the pain of people." When we were opening this research institute, I typed in the Internet the words "Research" and "Inauguration."

To my surprise I found that our Nobel laureate Gurudev Rabindranath Tagore had written a poem for the opening of the Bose Science Research Institute in Kolkata in 1917. The song was in Bengali. I went around the whole city of Kolkata trying to find the song. Nobody had it. Finally the Rabindra Bharati museum had it on a scratchy old 78 vinyl record. I brought it to Bombay, the home of Bollywood. I went to Chor Bazaar and got this old gramaphone to play this song. I found it was so beautiful. It was stunning. It was about research. It was about science and the promise of India. Then I got Pandit Jasraj, who had spent his early times in Kolkata, to sing it. Javed Akhtar wrote the song's lyrics in Hindi, translated from Gurudev's message and the great Mrinalini and Mallika Sarabhai helped to dance and choreograph the whole show. It was called the Dance of Life. The grand finale of the Dance of Life which I had the pleasure of writing and which today you will see later on in the evening talking about our great scientific progress. The finale, the last five minutes, I am going to call the Science Anthem. Ladies and Gentlemen, everywhere I have played the Science Anthem in the world; people have said to me, "This is fantastic." The Scientific Advisory Board to the Prime Minister, suggested to the President to make it the national Science Anthem because it was written by Rabindranath Tagore. And when I played it in Prague, Barcelona, and Paris the scientists there said, "Listen, this is not just for India. It belongs to scientists all over the world."

I am going to play it for you as the grand finale."

Welcome Address by Dr R. A. Mashelkar, Director General, CSIR

DR R. A. Mashelkar, Director General, CSIR, warmly welcomed the distinguished invitees and guests. He said that it was, " a very, very special day for us. It is CSIR's Foundation Day. It also, by the way, happens to be the birthday of the President of CSIR Society, our Prime Minister, Dr Manmohan Singh. This day is being celebrated round the country today. We have 38 laboratories from Kashmir to Kanyakumari. I was in Hyderabad yesterday, at the CCMB and IICT. I saw that CCMB was making preparations for receiving eight thousand young children. An exhibition was set up. At the 38 laboratories today, the number of children that must be visiting and getting charged and creating new dreams for themselves in terms of science …about science! About what science can do, not only for themselves but about what science can do for the country. This is a great day for us…a day for joyous celebration. I like to welcome specially, the honourable Speaker. Sir, your presence here has been a tremendous inspiration for not only those who are gathered here, but the entire family of CSIR of 22000 people. My very warm welcome to you Sir, Shri Kapil Sibal, our very beloved Minister. I remember, somebody asked me when he took over, "How do you find him? I said, "He is a breath of fresh air!" As time has gone on, Sir you have taken us by storm, if I may put it this way. You have lifted our spirits with your huge heart and great vision, and a great dream. Your enthusiasm has rubbed off on all of us. You have championed the cause of science like no one else and not only here but abroad …everywhere. So we thank you and we welcome you. We also welcome Dr Swati Piramal, who is going to be today's speaker and will talk about her a little later. We also welcome the legendary mother and daughter, the Sarabhais, whom you will see later in the day. I'd like to also perform a very pleasant duty, which I always perform on 26 September – that is announce the CSIR Diamond Jubilee Invention Award. Sir, our attempt is to make India innovative. And how do you make India innovative? Not just through scientists and technologists but at a very young age when children are in the school can we help them imbibe the spirit of innovation, and particularly create an awareness about the importance of intellectual property rights from a very early age? So we have been running this competition on an All- India basis. It is not just that we encourage them. It is not just that we pat them on the back or give them cash prizes. We do something special. Because we are so strong in intellectual property, as you saw, we help them patent their creative inventions so as to say. We bear all the expenses. The patents are in their names. It's not just that. Because we have laboratories we try to take these forward by building prototypes and so on and so forth, so that we create the inventors of tomorrow. I am happy to say that for the CSIR Diamond Jubilee Invention Award for Children (2005) we had a big competition. The final winners are being announced here today. Our First Prize is for Rs 50,000/. The jury did not find any

Dr R. A. Mashelkar, Director General, CSIR, delivering his welcome address

one worthy of that particular prize. CSIR always sets very high standards for itself. So even today, you will find that CSIR Technology Awards for its internal laboratories, there were some prizes, which were not given. This is the benchmarking we have. The Second Prize, I am very happy to announce, goes to Mihir Tandon and Riddhiman Yadav from Modern School, Vasant Vihar, New Delhi. It is for an Improved low cost artificial limb for above-knee amputees. Their heart is in the right place. The Third Prize has gone to Vishal Bhandari of Bhartiya Vidya Bhawan Mehta Vidyalaya, in New Delhi again. And Sir, again it is for somebody who is poor. It is an Improved design of Tri-Cycle Rickshaw. The Fourth Prize has gone to Mohammad Maaz Siddiqui of St. Aloysius High School, Kanpur Uttar Pradesh. His innovation is for a Composition of Litchi leaves and Black Pepper useful for lowering Hyperglycemia. And the Fifth Prize of Rs 5000/ has gone to Gaurav Shah for click herbal stick. He is from Sherwood College, Nainital, Uttaranchal. Let us give all of them a big hand."

Dr Mashelkar went on to say that, "We have had a great year! " He elaborated that, " for the last 3-4 years the increase in our Plan Budget has hovered around 25-35 per cent. There is tremendous belief in CSIR. We have also had some great breakthroughs. This has been our best year in science in terms of papers, in terms of quality of papers, and highest number of US patents. What I would like to say is that this organization is being driven by two things; One, a great ambition and second, great ambience within which our scientists flower. If you create an institute with great ambition but do not provide ambience, you can't fulfill it. You may have the great ambience but if you do not have the ambition you cannot win. Sir, I am very proud to mention to you, particularly our Hon'ble Speaker, on 29 November, I was in Washington. The World Bank President had invited four of us to talk about the future investments in S&T that the World Bank had to do and he told me something very interesting. He said on public institutions they had done benchmarking, so as to say, and they found that according to their judgment, CSIR was Number ONE as a model organization!"

Introducing Dr Swati Piramal, Dr Mashelkar said, " All the previous speakers (at the Foundation Day) have been male speakers. We never had a great lady giving this lecture. This year I welcome Dr Swati Piramal. She is a MBBS. She did her Masters from Harvard School of Public Health. She is a great leader with tremendous vision and passion, which has been witnessed by all of us who know her. You can see that among the industries which are emerging in India from which there is big hope, and not just IT, it goes beyond IT…it is biotech, it is- - drugs, pharma, and in that Nicholas Piramal has been a leader. I invite you to go and see their world class R&D centre in Bombay (Mumbai) and in which they have invested more than a hundred crore and which was inaugurated by our President. It has been all due to inspiration from her. She has been deeply involved at policy levels. She has been a member of the Science Advisory Committee to the PM, for example. I am proud to say she has been our partner. At the Institute of Genomics and Integrative Biology, Samir Brahmachari's lab in Delhi, we have created a Knowledge Partnership, which was extremely unique. There is something very special about Swati. She is a dreamer. I discovered that when I was chairing a committee on drugs and pharmaceuticals R&D 1999. When all of us were going to write a mundane, typical government report with hard conclusions and hard recommendations, and Action Plan, she said, "Let's dream." And that is a unique report I believe, because it actually dreams about an issue of economics into the future –the possible India that can happen in that point of time. She is not only a dreamer, but also a doer and with her firm faith in India, her passion for innovation, her big heart and big vision, I believe she's just a fantastic choice for today's CSIR Foundation Day Lecture."

The CSIR Young Scientist Award (2005) and CSIR Technology Awards (2005) were also presented on the occasion by Shri Somnath Chatterjee, the Chief Guest.

Shri Somnath Chatterjee and Shri Kapil Sibal then addressed the distinguished audience (pp. 315, 319). Dr Swati Piramal delivered the CSIR Foundation Day Lecture (pp. 322).

CSIR YOUNG SCIENTIST AWARDS

INTRODUCED in 1987, these awards are open to scientists working in CSIR system who have not attained the age of 35 years by 26 September of the preceding year.

The awards are given annually for outstanding contributions made by the young scientists, based on work done primarily in India, in the following fields: Physical Sciences (including instrumentation); Chemical Sciences; Biological Sciences; Engineering Sciences; and Earth, Atmosphere, Ocean and Planetary Sciences.

The scientist should be a regular employee of CSIR, holding a post of Group IV (Scientist 'B' or above) and should have joined the CSIR laboratory on or prior to 26 September of the previous year. The awards carry a citation, a plaque and a cash prize of Rs 50,000 with a grant of rupees ten lakh spread over a period of five years for pursuing research project independently.

Award Winners for 2005

Chemical Sciences

Dr Anup Kumar Misra

Dr Anup Kumar Misra, Central Drug Research Institute (CDRI), Lucknow, for his important contributions to the area of synthetic carbohydrate chemistry particularly towards synthesis of polysaccharides.

Engineering Sciences

Dr Guruswamy Kumaraswamy

Dr Guruswamy Kumarswamy, National Chemical Laboratory (NCL), Pune, for his significant contributions towards understanding the role of non-crystalline co-monomer "defects" in the crystallization of ethylene co-polymers.

Earth, Atmosphere, Ocean and Planetary Sciences

Dr Mangesh Uttam Gauns

Dr Mangesh Uttam Gauns, National Institute of Oceanography (NIO), Goa, for his significant contributions to the study of microzooplankton in the Arabian Sea, and for identifying the existence of a 'microbial loop', which has provided new insights into the biogeochemistry of a part of the Arabian Sea.

No awards were given in the fields of Biological and Physical Sciences this year.

CSIR Young Scientist Award-winners with Shri Somnath Chatterjee, Shri Kapil Sibal and Dr R.A. Mashelkar

CSIR TECHNOLOGY AWARDS

WITH a view to fostering and encouraging in-house multi-disciplinary in-house team efforts and external interaction for technology development, transfer, marketing and commercialization, CSIR in 1990, instituted two sets of Technology Awards viz. A. Technology Shields, and B. Technology Prizes.

A. Technology Shield – One shield each for Process and Engineering Technology, awarded for major multidisciplinary technological contributions that have a sustained and visible economic, industrial and societal impact. The award comprises a prestigious rolling shield, a citation, a plaque and a sizeable grant for a specific project to the awardees.

B. Technology Prizes – One prize each in the four technological areas of Biological, Chemical, Engineering and Materials Technology is awarded to individual(s) or a team from CSIR and to the contributors external to CSIR for a specific and outstanding technological achievement. Each Technology Prize comprises a cash award of Rs 2,00000 a citation and a plaque.

A fifth prize for Business Development and Technology Marketing of value Rs 1,00000 is awarded for making significant contributions to enhancing of business for CSIR knowledgebase. The Prizes are shared among the individuals or members of the team; a plaque and a citation is awarded to each member of the group(s).

During the period of last fifteen years, on an average only half of these have been awarded, signifying the rigour and true high standards that these awards maintained. Thus, these Awards, over the years have come to enjoy a very high reputation internally as well as externally.

No Technology Shield was awarded this year.

The Technology Prize for Biological Sciences was awarded to the team at National Botanical Research Institute (NBRI), Lucknow; for Chemical Technology jointly to teams at Indian Institute of Chemical Technology (IICT), Hyderabad, and National Chemical Laboratory (NCL), Pune; for Engineering Technology to the team at National Aerospace Laboratories (NAL), Bangalore.

No awards were given in the category of Matirials and Business Development and Technology Marketing this year.

Winners of the CSIR Technology Shield and CSIR Technology Prizes for 2005

A. CSIR Technology Shield

No awards in this category were awarded this year.

B. CSIR Technology Prizes

Biological Sciences

The Prize for Biological Sciences was awarded to the team at National Botanical Research Institute (NBRI), Lucknow, comprising Dr Rakesh Tuli, Dr Samir V. Sawant, Dr P. K. Singh, Shri Mithilesh Kumar and Shri C. P. Chaturvedi for the development of artificial promoters, novel δ -endotoxin coding genes and indigenous transgenic to cotton lines for resistance to insect pests.

Chemical Technology

The Prize for Chemical Technology was awarded jointly to the teams at Indian Institute of Chemical Technology (IICT), Hyderabad, and National Chemical Laboratory (NCL), Pune, comprising Dr R. B. N. Prasad, Shri S. K. Roy, Dr B. V. S.K. Rao, Dr P. P. Chakrabarti, Dr Vijay Kale, Dr B.L.A Prabhavati and Smt.K. N.Prasanna Rani, IICT, Hyderabad and Shri Prashant P. Barve, Shri Shrikant Ghike,

Foundation Day Celebrations

Shri Milind Y. Gupte, Shri Ravindra W. Shinde, Shri R. V. Naik, Dr J. G. Wadkar, Dr S. Devotta, Dr (Smt) Bote, Dr R.A. Kulkarni, NCL, Pune, for enzymatic degumming of rice bran oil (50 tpd capacity) and development of a complete porocess technology for manufacture of 2-acrylamido-2-methyl-1-propane sulfonic acid (ATBS), respectively.

Engineering Technology

The Prize for Engineering Technology was awarded to the team at National Aerospace Laboratories (NAL), Bangalore, comprising Shri M. Subba Rao, Shri H.N. Sudheendra, Dr R. Sundaram, Shri P. Ravi Kumar, Shri M.N. Neelakante Gowda, Shri Kotresh M. Gaddikeri, Shri R.S. Rawat, Shri M. Govindan Kutty and Advanced Composite Division for the development of advanced composite technologies for aerospace applications.

No awards were given in the category of Materials and Business Development & Technology Marketing this year.

The evening culminated with a dance presented by Mallika Sarabhai and her troupe. The presentation was called The Dance of Life—A History of Man's Quest for Science. Mementoes were presented to all the distinguished guests.

CSIR Technology Awards recipients with Shri Kapil Sibal, Minister of State for Science & Technology and Ocean Development; Shri Somnath Chatterjee, Speaker, Lok Sabha; and Dr R. A. Mashelkar, Director General, CSIR

CSIR Diamond Jubilee Invention Awards for School Children

THE CSIR Diamond Jubilee Awards for Invention of School Students were launched on World Intellectual Property Day (26 April, 2002), with a view to encouraging the school students to innovate, and generating greater IPR awareness among them. The competition is open to bonafide school students, below eighteen years of age. Sixty prizes can be given; the first prize carries Rs 50,000. CSIR not only gives these awards but also helps in fileing patents for the inventions that are patent worthy. These awards were announced for the first time on 26 September 2002.

After rigorous scrutiny, following students have been selected for these awards.

Winners of CDJ Invention Awards for 2005

FIRST PRIZE (Rs. 50,000/-)
Nil

SECOND PRIZE
(No. of Prizes –One, Rs. 25,000)

- Mihir Tandon and Riddhiman Yadav, Modern School, Vasant Vihar, New Delhi-110057, for developing an improved low cost artificial limb for above-knee amputees

THIRD PRIZE
(No. of Prizes – One, Rs. 15,000/-)

- Vishal Bhandari, Bhartiya Vidya Bhawan Mehta Vidyalaya, K.G. Marg, New Delhi, for developing an improved design of tri-cycle rikshaw

FOURTH PRIZE
(No. of Prizes – One, Rs. 10,000/-)

- Mohammad Maaz Siddiqui, St. Aloysius' High School, 36, Cantonment, Kanpur, Uttar Pradesh, for developing a composition of litchi leaves and black pepper useful for lowering hyperglycemia

FIFTH PRIZE
(No. of Prizes – One, Rs. 5,000/-)

- Gaurav Shah, Sherwood College, Naini Tal, Uttaranchal, for developing click herbal stick.

IMTECH organizes Workshop on Biodegradation

THE Institute of Microbial Technology (IMTECH), Chandigarh, organized a short course on'Molecular ecology of biodegradation' to spread the understanding of this area in association with the University of Florida, USA, supported by American Society of Microbiologists (ASM). Dr Rakesh K. Jain, Scientist F, IMTECH was the Course Coordinator of this international workshop, the other faculty members being Dr A. Ogram and Dr H. Castro, both from the Soil and Water Science Department, University of Florida, USA.

Among the invited lectures were those of Dr Tapan Chakrabarti, Microbial Type Culture Collection and Gene Bank, Dr S.K. Apte, Bhabha Atomic Research Centre and a few others. The workshop programme included extensive hands-on, wet lab experiments wherein all the 16 participants performed various molecular techniques such as soil DNA isolation, PCR amplification and cloning of genes, ARDRA, T-RFLP, DGGE, sequencing, etc. for studying the bacterial community structure in a pollutant-contaminated soil. They also conducted exercises on techniques pertaining to assessment of biodegradation such as enrichment culture techniques, extraction and identification of metabolites using GC and HPLC instruments.

Eighth Annual CFD Symposium at NAL

CFD Division of the Aeronautical Society of India (AeSI) recently organized Eighth Annual CFD Symposium in S. R. Valluri Auditorium of National Aerospace Laboratories (NAL), Bangalore. More than 150 delegates attended the symposium and over 30 papers were presented including nine invited talks, in the course of the three-day programme. CFD software companies, also participated as sponsors or exhibitors.

Dr Sekhar Majumdar, Chairman of AeSI's CFD Division, formally welcomed the gathering. He said that it accurately reflected the increasing potential of CFD as a design tool in diverse engineering disciplines such as wind turbine design, power and energy sector, manufacturing technology, design of turbomachines and spacecraft.

In his inaugural address, Dr Kota Harinarayana expressed his happiness that CFD was now being used to perform serious engineering computations and to really solve problems. 'We used CFD extensively in the design and development of the Tejas,' he recalled. But Dr Kota wished that CFD did more, e.g., the analysis of the complete aeroengine.

'We still don't have enough calibrated experiments, and turbulence is still the chief difficulty,' Dr Kota pointed out. He asked CFD experts to start looking at the (harder) off-design and unsteady condition problems ('our rotating machinery community is still haunted by unsteady conditions'). Dr Kota also advised the CFD community to prepare a detailed roadmap for the future.

Dr A. R. Upadhya, Director, NAL, who was the 'guest of honour' shared his experiences, as an aeroelastic Tejas designer, in interacting with CFD experts. 'We often talk a very different language: it took me a while to appreciate the inter-dependencies and grudgingly accept the verdict of my CFD partners … but it was a very enriching experience.'

Dr J. S. Mathur, General Secretary, AeSI's CFD Division, proposed vote of thanks.

Dr Vijay Kodagali selected for International Seabed Authority

DR Vijay Kodagali, Scientist, National Institute of Oceanography (NIO), Goa, and an expert on multi-beam echo-sounding system, has been selected as Senior Research Officer (Marine Geology) at the International Seabed Authority which has its headquarters at Kingston, Jamaica, administering ocean resources of the seabed and ocean floor and subsoil beyond the limits of national jurisdiction.

At NIO, Dr Kodagali successfully led surveys for polymetallic nodule project for seven years. During the last two years he served at the Department of Ocean Development, New Delhi, where he initiated seafloor mapping programme by use of swath bathymetric techniques in the Indian Exclusive Economic Zone.

Dr Kodagali is a recipient of CSIR Technology Award-2005 on Engineering Technology for his contribution for multibeam techniques. He has also worked at Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany, during the year 1995 on Marie Curie Post Doctoral Fellowship sponsored by EU and DST.

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