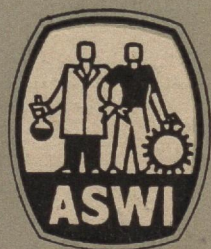


June 1964, Vol. XVI, No. 6

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GLIMPSES OF NEHRU'S LIFE

NEHRU'S LAST WILL

NEHRU & SCIENTIFIC RESEARCH

—DR. S.H. ZAHEER

NEHRU THE PLANNER

—K. RAY

He never looked back...

In 1920, P. K. Chatterjee, a young man just out of school, joined Tata Steel as an apprentice draughtsman.

Full of ambition and zeal to learn, he entered the Company's Technical School which afforded the opportunity to study during leisure. Young Chatterjee was among the first to complete a three-year course in engineering.

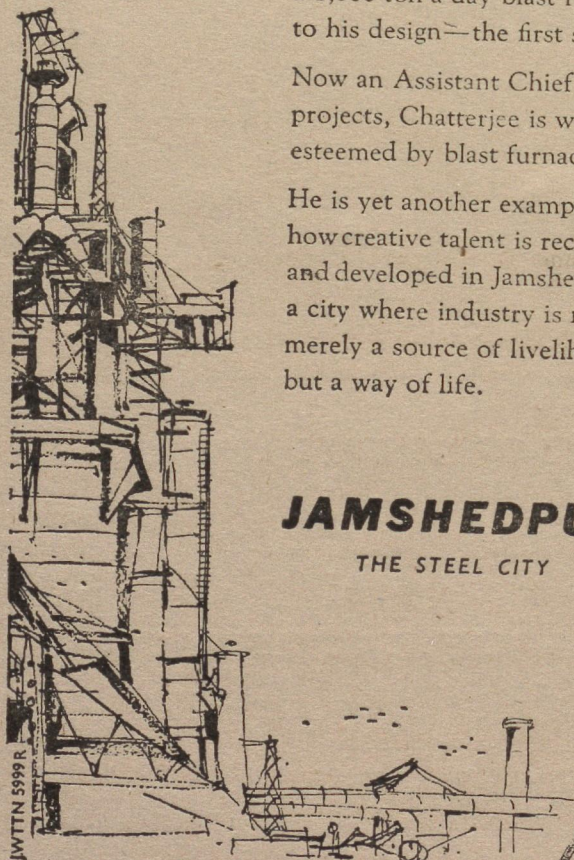
Over the years, Chatterjee has worked his way up in the Engineering Department, and blast furnaces have been his enduring interest. He has helped to rebuild the blast furnaces in the Jamshedpur Works, including a 1,000-ton-a-day blast furnace which was rebuilt to his design—the first such attempt in India.

Now an Assistant Chief Engineer in charge of special projects, Chatterjee is widely travelled and highly esteemed by blast furnace designers all the world over.

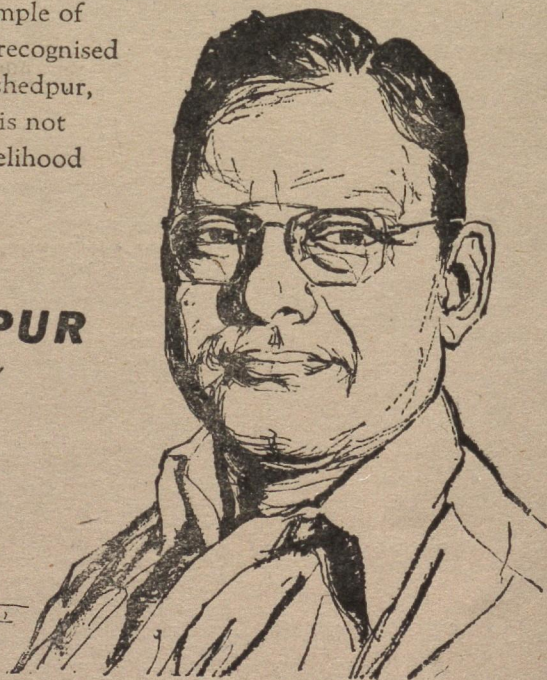
He is yet another example of how creative talent is recognised and developed in Jamshedpur, a city where industry is not merely a source of livelihood but a way of life.

JAMSHEDPUR

THE STEEL CITY



JWTTN 5999 R



The Tata Iron and Steel Company Limited

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VIJNAN KARMEE

Journal of the Association of Scientific Workers of India

Founder President: LATE SHRI JAWAHARLAL NEHRU

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In Loving and Cherished
Memory of our beloved
leader Nehru



One who was devoted to the cause of Science and Scientific workers

JAWAHARLAL NEHRU

Jawaharlal Nehru, Founder-President of the Association of Scientific Workers of India passed away on May 27, 1964. An ardent supporter of science and scientific workers, Nehru worked for peace and humanity. All scientific workers feel a personal loss at the passing away of Nehru. Nehru remains immortal in our hearts.

**TELEGRAPHIC MESSAGES OF
CONDOLENCE RECEIVED BY ASWI**

Filled deep sorrow over death great statesman scholar Pandit Jawaharlal Nehru. Please accept sincere sympathy.

Academician Malek
WFSW Prague



Our President has cabled the condolences of WFSW to Mrs. Indira Gandhi and I would like to tell all your colleagues and yourself our sense of deep loss at the death of Mr. Nehru.

Biquard
Paris



On behalf all Soviet educational and scientific workers express profound condolences in connection with death Jawaharlal Nehru outstanding fighter for peace and international cooperation President Founder ASWI Prime Minister of India.

Central Committee Educational and Scientific
Workers Union

USSR

RESOLUTION

passed by

Association of Scientific Workers of India on the sad demise of Shri Jawaharlal Nehru

This meeting of the Association of Scientific Workers of India records its profound sense of grief and sorrow at the passing away of Jawaharlal Nehru, the leader of our people and the Founder-President of our Association and offers its homage to the departed leader.

Jawaharlal Nehru always campaigned and worked for a modern India through social and political reforms combined with a planned organisation and development of industries. He had an abiding faith in science and technology as an instrument of social transformation. The present status and position of India in the world is largely the result of his thinking and efforts.

Jawaharlal Nehru was the father of nascent Indian Science. Over decades he inspired a whole generation of Indian scientific workers to work for a modern India. It was through advancement of science alone that people could be enabled to live without hunger, disease or ignorance, and deadening weight of superstitions, customs and traditions.

He was keenly aware of the key role scientists were to play in building a new India of his dreams. The vast expansion in the number of science laboratories and institutes in all branches of science and higher learning was possible because of his personal interest in it. Even before the laboratories,

he thought of the scientific workers and in 1947, his help in setting up the Association of Scientific Workers was decisive. "He wanted scientists to join the Association and make it an active and vital organisation."

Jawaharlal Nehru was the greatest scientist that India produced. His contribution to the vast expansion of facilities for scientific work in India is acknowledged by everyone. But his unique contribution lay in bringing the scientific method and approach to bear on solutions of problems faced by Indian Society. His emphasis on democracy, planning and socialism has provided a new model for nation-building not only for India but for the rest of the under-developed world.

Jawaharlal Nehru always expected the scientists to leave their ivory tower attitudes and ensure that the material progress resulting from advance of science and technology was used for benefit of society. His most consistent and resolute stand on the need for maintenance of world peace would serve as a guide to scientific workers all over the world. He always expected the scientists to see to it that science was not used for evil purposes.

This meeting of the ASWI pledges a new to carry forward his ideals and work for application of science for national progress, democratic planning, socialism and peace in the world.

RESOLUTION

passed by

the Joint Condolence Meeting of the Association of Scientific Workers of India, All-India Institute of Medical Sciences, Council of Scientific & Industrial Research, Defence Science Organisation, Indian Council of Agricultural Research, Indian Council of Medical Research, Institution of Engineers, Gazetted Officers Association of Meteorological Deptt. and University Grants Commission.

This meeting of the Association of Scientific Workers of India and other organisations records its sense of profound sorrow, on the passing away of Jawaharlal Nehru and conveys to Smt. Indira Gandhi and to other members of the family its feeling of deep sympathy in their bereavement.

Jawaharlal Nehru had realised quite early in his years that the path to India's progress and prosperity lay not only through dynamic social and political reforms but through concerted planning for organising the country's resources and building up its Industries. Even while deeply engaged in the freedom struggle, he had visions of Free India having its economic breakthrough by adoption of modern techniques and methods of science. His faith in Science and Technology as an instrument of social welfare is amply proved by the way he formulated the policies of the Government and initiated the several Five Year Plans.

As a statesman and a politician, he will have an assured place in the history of mankind. His intervention in many crucial and decisive moments on the international scene during the last 17 years of his office, determined the shape of world events. He was the builder of Free India and the architect of its many policies. His ideals and convictions

which arose out of innate liberalism of thought and action were responsible for the image of Free India as it stands out in the world today.

Jawaharlal Nehru can rightly be called the Father of nascent Indian Science. He believed firmly that "It was science alone that could solve the problems of hunger and poverty, of insanitation and illiteracy, of superstition and deadening customs and traditions, of vast resources running to waste, of a rich country inhabited by a starving people."

His abiding faith in Science is evident from the fact that despite his other preoccupations he always found time to associate himself in many ways with the activities of the various scientific organisations. He attended every session of the Indian Science Congress since his election as its President in 1945, in his own words, "to tell them (Scientists) of the Government's keen desire to help and encourage the pursuits of science and the application of science". He was also the Founder-President of the Association of Scientific Workers of India and took personal interest in its activities. In his own words, "he wanted the scientists to join the Association and make it an active and vital organisation." It was through his pioneering

efforts that the CSIR with its chain of National Laboratories came into existence to be shortly followed by the Atomic Energy Commission, the Defence Science Organisation, etc.

Jawaharlal Nehru has set before the country the goal of socialism which is to be achieved through a planned and economic growth and a proper mobilisation of its resources through the systematic application of Science and Technology. He advocated a scientific approach to every problem and firmly believed that one of the crying needs of India was to create a temper and climate which will be favourable to Science. It was at his insistence that the Government of India adopted the Scientific Policy Resolution "to foster, promote, and sustain by all appropriate means the cultivation of science and scientific research in all its aspects—pure, applied and educational, and to ensure an adequate supply within the country of research scientists of highest quality and so

recognise their work as an important component of the strength of the nation."

Jawaharlal Nehru maintained that "nuclear — including thermo-nuclear, chemical and biological (bacterial) knowledge and power should not be used to forge weapons of mass destruction." His whole effort was directed to achieving international peace and cooperation and to use science for international betterment.

Jawaharlal Nehru urged that "those of us who have the benefit of training, scientific, technical, etc. have a greater responsibility than others because after all this is a scientific, industrial and technological age."

We the scientists gathered here pledge to carry forward his ideals and work for application of science for national progress, planning, socialism, peace and international understanding.

The meeting also resolves that a copy of this resolution be sent to Shrimati Indira Gandhi.

At the Joint Condolence Meeting of the Association of the Scientific Workers of India, All India Institute of Medical Sciences and other Scientific Institutions, at Delhi, Shri C. Ramaswamy, Dy. Director General of Observatories, India Meteorological Department, said:

"On an occasion like this, it is very difficult for us to find words to express our feelings. Our hesitation to speak becomes even greater when we feel that we are very humble persons in comparison with the person about whom we wish to speak. Nevertheless, we shall be utterly failing in our duty if we do not express our feelings, however poor our power of expression may be. Hence it is that I have mustered courage to say a few words on this occasion.

The news of the sudden demise of our beloved Prime Minister Jawaharlal Nehru has shocked us beyond all description and has plunged us into grief. His death has created a void in the lives of the Scientists in our country which cannot be filled in. Men like him are born once in many centuries. We, men of Science of the present generation shall therefore never see any one who can take his place to support equally well the cause of science in our country.

Shri Jawaharlal Nehru gave a tremendous impetus to the growth of scientific institutions in India. It was under his inspiring and far-sighted leadership that we have so many National Laboratories and similar institutions in our country today. He has done his duty by giving us facilities for scientific work. It is for us now to fulfil the mission which he had held so dear to his heart. Let us therefore on this day take a solemn pledge to prove ourselves worthy of the trust he had placed in us.

It is impossible to think of the Indian Science Congress without thinking of Nehru. He became an integral part of it. Whenever we attended this annual Scientific gathering we always had an exhilarating feeling that we would have one more opportunity of hearing his inspiring words. But those words will never more be heard and the Science Congress will ever be the poorer for it.

We, Scientific Workers in the India Met. Deptt., have had the honour of his visiting our institutions twice during the last few years. The first occasion was on 13th Sept. 1958 when he performed the inaugural cere-

mony of the American Storm-detecting Radar at the Safdarjung Airport. The other occasion was on 6th Oct. 1961 when he visited our Astrophysical Observatory at Kodai-kanal. His speeches on both these occasions will ever remain fresh in our memory and the photographs showing him among our midst will ever adorn our institutions.

Our great Prime Minister taught us humility by practising it in his own life. I cannot therefore do better than to end my short speech with the following quotation from his inaugural address at the Science Congress in 1957 at Calcutta:

“I plead with the Scientists here and elsewhere to remember that the Scientific spirit is essentially one of tolerance, one of humility, one of realisation that somebody else may also have a bit of the truth. Scientists should note that they do not have a monopoly of the truth; that nobody has a monopoly, no country, no people, no book. Truth is too vast to be contained in the minds of human beings or in books however sacred.”

Glimpses of Nehru's Life and Work

(Nov. 14, 1889—May 27, 1964)

- 1889 Nov. 14:** Born in Allahabad.
- 1905:** Sailed for England. Entered Harrow.
- 1910:** Took his Natural Science Tripos (Honours) with Chemistry, Botany and Geology from Cambridge. Decided against joining ICS and joined the Inner Temple.
- 1912:** Called to the Bar. Returned to India after seven years in England. Attended the Bankipore Congress as a delegate.
- 1916:** Married Kamala Kaul in Delhi. Met Mahatma Gandhi for the first time at the Lucknow Congress Session.
- 1921:** Arrested for the first time in Allahabad along with Motilal Nehru and others.
- 1922:** Arrested in Lucknow (was in jail up to 3rd August). Arrested and imprisoned again for "intimidating" foreign cloth dealers. Sentenced to six months' simple imprisonment and a fine of Rs. 100.
- 1923:** Elected Secretary, All-India Congress Committee. Delivered presidential address at the U.P. Provincial Congress in Banaras.
- 1926-27:** Attended the Anti-Imperialist Conference in Brussels as a Congress delegate. Travelled Italy, Switzerland, England, Belgium, Germany and Russia.
- 1928:** Issued a Press statement on police assault on the boycott of the Simon Commission, in Lucknow. Delivered the presidential address to the first All-India Socialist Youth Congress in Calcutta.
- 1929:** Elected President of the Nagpur Political Conference. Gandhiji recommended his name for the presidentship of the Lahore session of the Indian National Congress. Delivered presidential address at the tenth AITUC session at Nagpur.
- 1930:** Sentenced to six months' simple imprisonment for breaking the Salt Law. Released from prison and re-arrested after attending the Peasants' Conference in Allahabad. Sentenced to two years' rigorous imprisonment and a fine of Rs. 600.
- 1931:** Released from jail along with Mahatma Gandhi, Mrs. Sarojini Naidu and 25 others. Motilal Nehru died. Arrested during the agrarian agitation in U.P. and sentenced to two years' rigorous imprisonment.
- 1933:** Released from prison on account of mother's serious illness.
- 1934:** Toured earthquake-hit Bihar and organised relief for the sufferers. Arrested in Allahabad on a sedition charge and sentenced to two years' imprisonment. Released from prison on account of Kamala Nehru's critical condition.
- 1936:** Kamala Nehru died. Received a manifesto by 21 members of the Bombay business community opposing his socialist views. Re-elected President of the Indian National Congress.
- 1938:** Visited Spain during the Civil War and met Republican leaders. Chairman, National Planning Committee.

1939: Sent a message to the *News Chronicle*, London, regarding World War II.

1940: Imprisoned during the individual satyagraha following the outbreak of World War II.

1941: Released from prison.

1942: Spent the year outlining India's demand for independence to various international leaders. Cabled a message to the *New York Times* regarding independence. Arrested along with Mahatma Gandhi, Maulana Azad and other members of the Congress Working Committee.

1944: Started writing "The Discovery of India".

1945: Released after 2 years and 10 months in prison. Urged the need for change of Government. Made a major speech on 1942 happenings at Gandhi Grounds, Delhi, to a crowd of 1,00,000. Appealed to Japan to promote peace in Asia.

1946: Joined the Interim Government as Member for External Affairs and Commonwealth Relations and was nominated Vice-President of the Executive Council. Addressed a mass meeting at Allahabad in which he explained the political problems, India faced. Published his "Discovery of India". Elected President of the Indian National Congress for the fourth time. Issued orders for ceasefire at Frontier.

1947: Inaugural Address in Indian Science Congress. Sponsored the Asian Relations Conference held in New Delhi. Addressed the Manufacturers' Conference and pleaded for rapid industrialization. Made an official broadcast as first Prime Minister of India.

1948: Founder President, Association of Scientific Workers of India. Launched the first ocean-going steamer made in India—Jala Usha—at Vizagapatnam. Laid the

foundation stone of the new capital of Orissa. Bhubaneswar. Inaugurated the third session of the United Nations Economic Commission of Asia and Far East at Ootacamund. Attended the Commonwealth Prime Ministers' Conference which led to the continued membership of the Republic of India in the Commonwealth. Addressed a special session of the UN General Assembly in Paris.

1949: Inaugurated the 19-nation conference on Indonesia in New Delhi. Addressed the US Congress, pledging India to work for "liberty, justice and peace". Delivered a speech in the Canadian Parliament.

1950: Inaugurated the Supreme Court of India. Formed a new Cabinet after India was proclaimed Republic. Chairman, Planning Commission.

1951: Warned the UN against any hasty action in Korea. Charged the USA and Britain with supporting Pakistan over Kashmir. Demanded "No War" assurance from Pakistan.

1952: Rejected suggestion of withdrawing the Kashmir case from the U.N. Was elected Leader of the Congress Parliamentary Party.

1953: Inaugurated nationalized Indian Airways Corporation.

1954: Declared open the Bhangi Colony Community Centre in Delhi; addressed Atomic Energy Conference; had talks with Marshal Tito when he visited India.

1955: Inaugurated radio-telephone service between India and Burma; led a procession of Gadia Lohars into Chittor Fort; attended the historic conference at Bandung.

1956: Inaugurated the All India Manufacturers' Organisation; addressed the first All India Seminar on Parliamentary Democracy; addressed a special convocation of the College of Physicians and Surgeons; inaugu-

rated the 10th annual session of Unesco in New Delhi.

1957: Inaugurated the Atomic Reactor at Trombay; inaugurated 30th session of the Federation of Indian Chambers of Commerce and Industry; addressed the Science Congress in Calcutta.

1958: Announced the formation of the Atomic Energy Commission; welcomed Soviet decision to suspend nuclear tests; inaugurated 14th session of International Air Transport Association.

1959: Had talks with Dr. Nkrumah, Prime Minister of Ghana, in New Delhi; delivered first Azad Memorial lectures on "India today and tomorrow"; criticized "vested interests and monopolies" at FICCI session; formally opened Shaktiman Truck Factory at Jabalpur; visited Iran.

1960: Laid foundation stone of rail-cum-road bridge over the Brahmaputra at Pandu; was presented with replica of Soviet pennant planted on moon; opened Chambal bridge at Dholpur; visited UAR, Turkey Lebanon and Syria; announced the decision to constitute a new State of Nagaland.

1961: Visited the USSR; commissioned first India made electric locomotive at Chittaranjan; made an official visit to the USA.

1962: Formally opened Garmukteswar bridge, U.P.'s largest prestressed concrete bridge over the Ganga; inaugurated the first Asian History Congress; inaugurated Bhakra left-bank power house; attended a civic reception to Soviet President L. Brezhnev; inaugurated Nunmati Refinery; invited King Mahendra of Nepal to visit India; was re-elected Leader of the Congress Parliamentary Party; visited France and UAR after attending Commonwealth Premiers' Conference; addressed Unesco in Paris.

1963: Inaugurated Rihand Dam; inaugurated the Village Volunteer Force; dedicated Bhakra Dam to the nation.

1964: Attended Congress session at Bhubaneswar; broadcast to nation and appealed for communal harmony.

Accepted invitation to inaugurate the ensuring "Science and the Nation" Symposium of the ASWI.

Copy of the letter which Shri Jawaharlal Nehru wrote to Dr. S. H. Zaheer, Director-General, C S I R, from Dehra Dun on 24th May, 1964 i.e. three days before his death.

Circuit House,
Dehra Dun.

May 24, 1964.

My dear Munne,

Your letter of May 15th about the Symposium on Science and the Nation during the Third Five Year Plan, reached me on my return from Bombay. I am sorry for the slight delay in answering it.

As you probably know, I shall be going to the Commonwealth Prime Ministers' Conference in London about the middle of July. I expect to be back in time for your Symposium, and provisionally you may take it that I shall inaugurate this Symposium on the 27th July.

I see that you have invited Dr. Linus Pauling from the U.S.A. to this Symposium. I understand that he is desirous of coming here. I do not know if he can come for this Symposium, but, even apart from that, it will be desirable to invite him to come. Towards the end of May, he is probably going to Australia for six weeks. On his return from there, he might be asked to visit India. Mrs. Pauling will be accompanying him to Australia.

Yours affectionately,

Sd/-
Jawaharlal Nehru

Dr. Husain Zaheer,
Director-General,
C.S.I.R., New Delhi

NEHRU'S LAST WILL AND TESTAMENT

Extracts from the Will and Testament of Mr. Nehru, dated June 21, 1954.

I have received so much love and affection from the Indian people that nothing that I can do can repay even a small fraction of it, and indeed there can be no repayment of so precious a thing as affection. Many have been admired, some have been revered, but the affection of all classes of the Indian people has come to me in such abundant measure that I have been overwhelmed by it. I can only express the hope that in the remaining years I may live, I shall not be unworthy of my people and their affection.

To my innumerable comrades and colleagues, I owe an even deeper debt of gratitude. We have been joint partners in great undertakings and have shared the triumphs and sorrows which inevitably accompany them.

I wish to declare with all earnestness that I do not want any religious ceremonies performed for me after my death. I do not believe in any such ceremonies and to submit to them, even as a matter of form, would be hypocrisy and an attempt to delude ourselves and others.

When I die, I should like my body to be cremated. If I die in a foreign country, my body should be cremated there and my ashes sent to Allahabad. A small handful of these ashes should be thrown into the Ganga and the major portion of them disposed of in the manner indicated below. No part of these ashes should be retained or preserved.

My desire to have a handful of my ashes thrown into the Ganga at Allahabad has no religious significance, so far as I am con-

cerned. I have no religious sentiment in the matter. I have been attached to the Ganga and the Jumna rivers in Allahabad ever since my childhood, and as I have grown older, this attachment has also grown. I have watched their varying moods as the seasons changed, and have often thought of the history and myth and tradition and song and story that have become attached to them through the long ages and become part of their flowing waters.

The Ganga, especially, is the river of India, beloved of her people, round which are intertwined her racial memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India's age-long culture and civilisation, everchanging, ever flowing, and yet ever the same Ganga. She reminds me of the snow-covered peaks and the deep valleys of the Himalayas, which I have loved so much, and of the rich and vast plains below, where my life and work have been cast.

Smiling and dancing in the morning sunlight, and dark and gloomy and full of mystery as the evening shadows fall, a narrow, slow and graceful stream in winter, and a vast roaring thing during the monsoon, broad-bosomed almost as the sea, and with something of the sea's power to destroy, the Ganga has been to me a symbol and a memory of the past of India running into the present, and flowing on to the great ocean of the future.

And though I have discarded much of past tradition and custom, and am anxious that

India should rid herself of all shackles that bind and constrain her and divide her people, and suppress vast numbers of them, and prevent the free development of the body and the spirit though I seek all this, yet I do not wish to cut myself off from the past completely.

I am proud of that great inheritance that has been, and is, ours, and I am conscious that I too, like all of us, am a link in that unbroken chain which goes back to the dawn of history in the immemorial past of India. That chain I would not break for I treasure it and seek inspiration from it. And as

witness of this desire of mine and as my last homage to India's cultural inheritance, I am making this request that a handful of my ashes be thrown into the Ganga at Allahabad to be carried to the great ocean that washes India's shore.

The major portion of my ashes should, however, be disposed of otherwise. I want these to be carried high up into the air in an aeroplane and scattered from that height over the fields where the peasants of India toil, so that they might mingle with the dust and soil of India and become an indistinguishable part of India.

NEHRU AND SCIENTIFIC RESEARCH

DR. S. HUSAIN ZAHEER

The sad and sudden demise of Pandit Jawaharlal Nehru is the greatest shock for every scientific worker in India, young or old. Every one of us feels orphaned with his death and gloom has enveloped us all round. A sense of isolation grows in our hearts because, for this generation of scientists, Nehru was not only inspiring leader but he was the Father of Modern Indian Science. As an architect and builder, he remoulded and re-shaped the face of India with his rational chisel and hammer of scientific outlook.

He created a scientific temper in the country and laid the foundation of scientific research so deep that the coming generation of Indian scientists can build an India of the dream of Pandit Jawaharlal Nehru, which will be based on co-operation (not competition) and principles of universality and away from sectarian and dogmatic outlook. These are the basic principles which science seeks and discovers and due to this, roots of science lie deep in man's highest capabilities and aspirations. Pandit Jawaharlal Nehru's explicit faith in the role of science and scientists in the affairs and progress of the country arose out of the belief that it is an inherent obligation of a great country like India, which had a glorious tradition of learning and of original thinking in ancient times, to move forward with zest and dedication in the exhilarating task of cultivation of knowledge and search for new frontiers.

Describing the present age as the most exciting period of human existence, he invited scientific workers to participate in that excitement, which is probably mankind's great-

est enterprise today. Thus with his inspiration and help emerged a band of scientific workers of which India can well be proud and it is in this sense that I call him the Father of modern science in India.

While I can recall nostalgically a thousand and one things which Nehru did for initiating the development of modern science in India, what matters to me and the scientific workers of India today is not so much what he did but what he was. He did more by mere being and by being in so many laboratories and scientific institutes in rapid succession as no one else could be. Hard work, hopes and aspirations were sustained by his mere presence. There was hardly a project, plant, or laboratory, which he did not visit. He impressed the workers in them by his eagerness to know about new projects.

His own naive curiosity appealed to the pioneers more than his public acts or speeches. He often told his technician-guides that he was not fully equipped to appreciate all their work but his eagerness to see it never wavered. From Kanya Kumari to Kashmir, in every corner of India, numerous foundation-stones laid by him bear witness to the fact that he tapped extra reserves of energy for these detailed visits, which often left him exhausted.

No matter what he said or did, it was his being in the laboratories and institutes, factories and research organisations that counted. It helped and encouraged the eager young scientists, engineers and technologists, many of them returned from abroad, who

wondered whether the rest of India really knew what they were doing. Under this background they valued the visits of their Prime Minister, who was the most potent link between them and the people, explaining to the common man the significance of the work they were doing. So they all took photographs of him and, nesting about scaffoldings in half-built shafts told stories of what he had said and done at different places. Everyone of them is able to say with perfect precision on what date the Prime Minister visited their organisation last and what he saw, said and did. The little remarks he so often threw off, more or less unconsciously, have been treasured by his listeners for a whole life time.

Nehru felt unhappy over the fact that India was not in a position to provide Indian Scientist those inducements and facilities for scientific work which more advanced countries could afford. He was sorry, therefore, that many Indian scientists should prefer to stay abroad rather than return to India. He could only appeal to them to accept the gospel of drudgery and inconvenience at home in order to serve to build a new India.

He continuously fought against the dogmatic outlook of religion and mythology and upheld the rationalistic outlook of science. He very much resented the dual approach and outlook of most Indian scientists, that is, their having a scientific attitude limited to the laboratory and an unscientific attitude practised outside the laboratory. He failed to understand how scientists could act in their personal lives in an unscientific and irrational way. He expressed his feeling regarding this whenever he found an opportunity.

I remember that a few years back, an Ashtagraha Yajna was performed for removing the evil influence of the meeting of eight planets. Some Indian scientists parti-

icipated in this organised, anti-social activity. Besides the fact that the Yajnas wasted valuable material which could otherwise be better utilised, the Ashtagraha Yajnas were the result of popular superstitions which are thousands of years old, and the Yajnas in turn strengthened those superstitions and stereotypes which are clearly contradictory to scientific thinking.

None of the Indian scientists was bold enough to condemn the entire episode and the scientists' participation in it. It was only Pandit Jawaharlal Nehru who came out openly to criticise the episode and the anti-social forces behind it, because he felt that if science is to make a vital contribution to the life of the people in this country, we must make a definite effort not only to add to its quantity but also to improve its quality.

He expressed that this will not be possible if Indian scientists continue to compromise with anti-scientific attitudes and actively practise them, because science is no longer a hobby of quaint gentlemen or heroes dealing in some kind of obscurantism. It is a campaign against all forms of obscurantism and for intellectual honesty. In order to create a climate and temper of science, where social, industrial and material progress may take place rapidly, Indian science must express itself openly against superstition, occult and magic.

To fight against this superstition and dogmatism, Panditji in a most successful way explained the basic principles of science and its evolution in a simple language, in his writings as well as speeches. He made accessible to a wide reading public a rich fund of substantial scientific information against a social background of changing human needs in the struggle of man with external nature and he accomplished this task with no less novelty than with distinction. His looking at things, events and human relations was a

departure from the customary visions. He correlated human needs with the fundamentals of basic sciences and applied scientific reasoning to social and economic questions. In his numerous writings he explained scientific facts and principles for the common man. He will, therefore, have a permanent place in taking science to the doors of the common man.

Most people in our country, not knowing the factual background of scientific research and development, argued as to what was the use of spending so much on research without getting any return forthwith. But Nehru was aware of the fact that the realisation of the welfare state will depend ultimately on the emphasis and resources we devote to scientific research. He repeated so often that knowledge and hard work constitute the only key, the only road to prosperity and progress of the country. That is why under him large amounts of money were sanctioned and spent for scientific research and development.

Scientific research for him was not only important for development but also for the cultivation of a searching outlook as he said "In Sanskrit it is called Jijnasa, that is searching. The scientific mind always tried to find out the reasons and causes of things. Not being quite satisfied with what you have got, or feeling that you have not achieved everything, but that always you have got to achieve more to go ahead, the active mind pursues the truth." Research was a word that moved him. "I look upon research," he said, "as something leading a community, country or humanity forward in its march towards its goal."

He said, "Scientific research is the only sure way by which science can be harnessed for the best of public use, and for the betterment of the nation. Many other countries have beaten us in such development, and

though we cannot make up the work of centuries in a few years, there is this distinct lesson to learn that humanity can be lifted out of misery only by science and its proper use."

There were scientific institutes in India before independence, but the diversity of India's economic problems and a great variety of natural resources scattered over widely separated areas made it essential to have national laboratories to be distributed all over India where scientific talents could be employed and given an opportunity to pursue scientific investigations.

As President of the Council of Scientific and Industrial Research, Pandit Nehru was instrumental in establishing a chain of national laboratories from Kashmir in North to Kerala in South and from Bhavnagar in West to Jorhat in East. Before his demise there were 30 national laboratories in India. Panditji was so enthusiastic about these laboratories that once he said, "I feel how much better it would have been for me to be the Director of this laboratory if I had the confidence than to be the Prime Minister." Panditji was not satisfied with only construction of buildings for the laboratories. He said, "Even though we have completed a chain of national laboratories, we must not be content with this achievement. In fact, this is only the first step in the difficult ladder of progress which we have to climb."

The Council owes to him and his personality alone, the enormous development of science and technology in the country which is reflected today in every sphere of activity of the nation. It was he who gave us the necessary scientific climate in which alone science and technology can grow.

The best homage we can pay to our departed leader would be to carry forward the ideals for which he lived and died.

NEHRU the PLANNER

—Pre-Independence Period

KAMALESH RAY

Socialistic planning was a foregone conclusion long before India became independent. Ten years before she emerged as a free nation, India's economic and scientific planning started. Jawaharlal Nehru was the Chairman of the National Planning Committee which was constituted towards the end of 1938 by the then Congress President Subhas Chandra Bose. Eminent scientist like Meghnad Saha, and economist like K. T. Shah were among the members of the Committee. Divided into twenty nine sub-committees, the National Planning Committee worked for about four years.

Jawaharlal Nehru, along with other national leaders was put in jail during the 1942 movement, and during this period of detention, he wrote *The Discovery of India*, in which he says, "The problems of poverty and unemployment, national defence and economic regeneration, in general, cannot be solved without industrialization. As a step towards such industrialization, a comprehensive scheme of national planning should be formulated. This scheme should provide for the development of heavy key industries, medium scale industries and cottage industries. . . . But no planning could possibly ignore agriculture which was the mainstay of the people; equally important were the social services. So one thing led to another and it was impossible to isolate anything or to progress in one direction without corresponding progress in another. The more we thought of this planning business,

the vaster it grew in its sweep and range till it seemed to embrace almost every activity. That did not mean that we intended regulating and regimenting everything, but we had to keep almost everything in view even in deciding about one particular sector of the Plan. The fascination of this work grew upon me and I think upon the other members of our Committee also."

Political freedom without a systematic national reconstruction plan and its execution would be of no real value to the country, Nehru realized. Planning is not merely a dream. It means hard work and sizing up all fronts. His scientific attitude led him to toss about with the quantitative figures trying to fit them in the picture of free India of the future. He wrote "We calculated that a really progressive standard of living would necessitate the increase of the national wealth by 500 to 600 per cent. That was, however, too big a jump for us, and we aimed at a 200 to 300 per cent increase within ten years.

We fixed a ten year period for the Plan, with control figures for different periods and different sectors of economic life.

Certain objective tests were also suggested:

(1) The improvement of nutrition — a balanced diet having a calorific value of 2,400 to 2,800 units for an adult worker.

(2) Improvement in clothing from the then consumption of about 15 yards to at least 30 yards per capita per annum.

(3) Housing standards to reach at least 100 sq. feet per capita.

Further, certain indices of progress had to be kept in mind:

- (i) Increase in agricultural production.
- (ii) Increase in industrial production.
- (iii) Diminution of unemployment.
- (iv) Increase in per capita income.
- (v) Liquidation of illiteracy.
- (vi) Increase in public utility services.
- (vii) Provisions of medical aid on the basis of one unit for 1,000 of population.
- (viii) Increase in the average expectation of life.

The objective for the country as a whole was the attainment, as far as possible, of national self-sufficiency. International trade was certainly not excluded but we were anxious to avoid being drawn into the whirlpool of economic imperialism.

So, though we did not start with a well-defined social theory, our social objectives were clear enough and afforded a common basis for planning. The very essence of this planning was a large measure of regulation and co-ordination. Thus, while free enterprise was not ruled out as such, its scope was severely restricted. In regard to Defence Industries it was decided that they must be owned and controlled by the State. Regarding other Key industries, the majority were of opinion that they should be state-owned, but a substantial minority of the Committee considered that State control would be sufficient. Such control, however, of these industries had to be rigid. Public Utilities, it was decided, should be owned by some organ of the State — either the Central Government, Provincial Government or a Local Board. In regard to other important and vital industries, no special rule was laid down but it was made clear that the very

nature of planning required control in some measure, which might vary with the industry."

National Planning by its very nature has to be comprehensive and all-pervading. No sector can be left out. There can be only one goal for all—the national goal. In democratic planning, individualism cannot be ruled out, yet it must not conflict with national perspective. Nehru continued:

"I was agreeably surprised at the large measure of unanimity achieved by us in spite of the incongruous elements in our Committee. The Big Business element was the biggest single group and its outlook on many matters, especially financial and commercial, was definitely conservative. Yet the urge for rapid progress and the conviction that only this way could we solve our problems of poverty and unemployment, were so great that all of us were forced out of our grooves and compelled to think on new lines. We had avoided a theoretical approach, and as each practical problem was viewed in its larger context, it led us inevitably in a particular direction. To me the spirit of co-operation of the members of the Planning Committee was peculiarly soothing and gratifying, for I found it a pleasant contrast to the squabbles and conflicts of politics. We knew our differences and yet we tried and often succeeded, after discussing every point of view, in arriving at an integrated conclusion which was accepted by all of us or most of us."

The National Planning Committee, though appointed by the Indian National Congress of 'Spinning Wheel' fame of those days, made a radical departure in its outlook under the leadership of Nehru and his scientist and economist colleagues. Nehru said "I am all for tractors and big machinery and I am convinced that the rapid industrialization of India is essential to relieve the pressure on land, to combat poverty and raise standards

of living, for defence, and a variety of other purposes. But I am equally convinced that the most careful planning and adjustment are necessary if we are to reap the full benefit of industrialization and avoid many of its dangers."

"The three fundamental requirements of India, if she is to develop industrially and otherwise are: a heavy engineering and machine making industry, scientific research institutes, and electric power. These must be the foundations of all planning, and the National Planning Committee laid the greatest emphasis on them. We lacked all three and bottle-necks in industrial expansion were always occurring. A forward policy could have rapidly removed these bottle-necks, but (British) government's policy was the

reverse of forward and was obviously one of preventing the development of heavy industry in India."

While fighting for national freedom with no immediate prospect of achieving it, and cruelly confined in prison by the foreign ruler, Nehru found National Planning a viable factor for all under-developed countries in the international sphere. Nehru wrote "This planning is necessary today in all countries of arrested growth, like China and India, which have strong traditions of their own."

Finally, India became Independent in 1947. The Planning Commission was formed in 1950. Jawaharlal Nehru remained the Chairman of the Planning Commission till his last day.

Symposium on "Science and the Nation During the Third Five Year Plan"

Scientists from all over India and Afro-Asian countries will meet in New Delhi from 27-30 July, 1964 at a Symposium on "Science and the Nation During the Third Five Year Plan."

Organised by the Association of Scientific Workers of India, the Symposium will be attended by nearly 200 delegates, representing public and private sector research and technological institutions. A delegation of about 40 from countries in Asia and Africa is also expected to attend.

The aim of the Symposium is to review the present field of application of science in the various nation-building activities during the current five year plan and to assess the overall task of science on the basis of which planning of scientific research and financial allocation can be made. The participants would take stock of the achievements and shortfalls in the application of scientific knowledge in the development programmes of the nation. It is expected that the Scientists from Afro-Asian countries, after mutual consultations, would also prepare for a conference on Symposium on the problem of scientific and technological developments in emerging countries to be held sometime in 1965 to chalk out a common programme based on experience and needs.

The Symposium, the first of its kind to be organised by the Association, is proposed to be held in six sessions to discuss Science in Key Industries:

Session I: Science in Irrigation and Power including Atomic Energy.

Session II: Science in Food and Agriculture.

Session III: Science in Steel, Mines, Fuels, Heavy Engineering and other Key Industries.

Session IV: Science in Chemicals and Petroleum.

Session V: Science in Transport & Communications — Railways, Aviation, Road Transport, Posts & Telegraph.

Session VI: Science in Health, Building and Town Planning.

Session VII: Planning and Finance of Science Organisation of Scientific Research; Training of Scientists, Science and Govt., Science and Administration.

Session VIII: Science and International Relations.

Response to the participation in the symposium has been very encouraging. Over 100 persons from 70 institutions in the country have already intimated their willingness to participate. Number of papers received so far exceeds 70. Teams of scientists and technologists have already been nominated by various Ministries.

Representatives of the Planning Commission, Atomic Energy Establishment, private and public undertakings and numerous other organisations are participating. Nearly 15 national laboratories of CSIR are sending their teams to present papers. Eleven Universities are participating in the Symposium. All the branches of the Association are contributing papers and sending delegates to the Symposium.

Sixteen Afro-Asian countries have already nominated their representatives in response to the invitation extended by the Association. Three representatives of the Association, Dr. S. K. Mukherjee, Dr. C. R. Krishnamurthi and Mr. A. Rahman have toured the countries of Africa, South East Asia and the Middle East to meet scientists in those regions and have personally invited them to participate in the Symposium. Reports received from these representatives indicate that response from the scientists of the countries which they have visited, is very encouraging.

Invitations have also been extended to Mongolia and USSR to send their representatives to attend the Symposium as the honoured guests of the Association. Observers are expected from the World Federation of Scientific Workers and from its Regional Centres.

Preparations for holding the Symposium are going apace. An Organising Committee representing numerous scientific institutions of Delhi and also including officials, active functionaries and Presidents and Secretaries of the branches of the Association has already been formed. A Steering Committee headed by Dr. N. P. Gupta, President of the Association and consisting of Dr. S. Husain Zaheer, Director-General of Scientific and Industrial Research, Jagjit Singh (Kalinga Prize Winner), Dr. Sadgopal, Dr. S. K. Roy and Dr. M. S. Iyengar, General Secretary (Orgn.) has been set up.

The following organisations are participating in the Symposium:

I. Ministries

1. Ministry of Education.
2. Ministry of Steel, Mines, Fuel and Heavy Engineering.
3. Ministry of Food and Agriculture.

4. Ministry of Irrigation and Power.
5. Ministry of Defence.
6. Ministry of Railways.
7. Ministry of Industry.
8. Ministry of Petroleum and Chemicals.
9. Ministry of Transport.
10. Ministry of Works & Housing.
11. Ministry of Communication.

II. Planning Commission

III. Atomic Energy Commission

IV. Directorate General of Technical Development.

V. Council of Scientific & Industrial Research

1. National Metallurgical Laboratory, Jamshedpur.
2. National Chemical Laboratory, Poona.
3. Central Building Research Institute, Roorkee.
4. Indian Institute of Petroleum, Dehra Dun.
5. Central Fuel Research Institute, Dhanbad.
6. Central Electronics Engineering Research Institute, Pilani.
7. Central Road Research Institute, Delhi.
8. Central Salt and Marine Products Research Institute, Bhavnagar.
9. Central Electro-Chemical Research Institute, Karaikudi.
10. Central Food Technological Research Institute, Mysore.
11. Central Public Health Engineering Research Institute, Nagpur.
12. Central Mechanical Engineering Research Institute, Durgapur.
13. Central Drug Research Institute, Lucknow.

14. Regional Research Laboratory, Hyderabad.

15. Regional Research Laboratory, Assam.

16. INSDOC, New Delhi.

17. Indian Institute of Oceanography Unit, Delhi.

18. Central Design and Engineering Unit, Delhi.

19. Birla Industrial and Technological Museum, Calcutta.

VI. Public Undertakings

1. Hindustan Steel Ltd., Rourkela.

2. Hindustan Steel Ltd., Bhilai.

3. Heavy Engg. Corpn. Ranchi.

4. Neyveli Lignite Corporation Ltd., Madras.

5. National Coal Development Corporation, Ranchi.

6. Hindustan Cables Ltd., Burdwan.

7. The Fertilizer Corporation of India Ltd., Sindri.

8. The Fertilizer Corporation of India Ltd., Rourkela.

9. Singareni Collieries Ltd., Singareni, Andhra Pradesh.

10. Burma-Shell Oil Storage and Distributing Co. of India Ltd., New Delhi.

VII. Universities

1. University of Poona.

2. University of Calcutta.

3. University of Rajasthan.

4. University of Delhi.

5. University of Kerala.

6. Punjab Agricultural University.

7. University of Roorkee.

8. Annamalai University.

9. Banaras Hindu University.

10. University of Aligarh.

11. University of Mysore.

VIII. Other Institutions

1. Indian Institute of Technology, Delhi.

2. Directorate of Animal Husbandry, Lucknow.

3. Central Sugar Research Institute, Kanpur.

4. Central Rice Research Institute, Cuttack.

5. Central Arid Zone Research Institute, Jodhpur.

6. Indian Agricultural Research Institute, Delhi.

7. Power Research Institute, Bangalore.

8. Haffkine Institute, Bombay.

9. Central Research Institute, Kasauli.

IX. Indian Council of Medical Research, New Delhi

X. Geological Survey of India, Calcutta.

XI. Indian Bureau of Mines, Nagpur.

XII. Coal Board, Calcutta.

XIII. Central Water, Power Commission.

XIV. Foreign Participants.

Over 40 delegates are expected to participate in the conference as observers. Invitations have been issued to the following countries:

1. South East Asia and Far East

Japan, Mongolia, Philippines, Indonesia, Viet Nam, Laos, Cambodia, Malaysia, Thailand, Burma, Ceylon and Nepal.

2. The Middle East

Afghanistan, Iran, Iraq, Syria, Jordan, Saudi Arabia, U.A.R., Algeria, Morocco, Lebanon, Tunisia, Nigeria.

3. Africa

Sudan, Ethiopia, Tanganyika, Kenya,
Uganda, Brazzaville, Ghana and Mali.

4. Asiatic Republic of U.S.S.R.

The following twelve scientists from the
Afro-Asian countries have so far accepted
the invitation.

W. ASIA

1. Dr. Mohser Kehouk, Sous Directeur,
Institute Pasteur, Tunis.
2. Dr. Salwa Nassar,
American University of Beirut,
Beirut, Lebanon.
3. Hamid Salehi,
Iran.
4. A. G. Qaissaunee,
Dean, Faculty of Engineering,
Kabul University,
Kabul, Afghanistan.
5. Dr. A. Sasson,
Dean, Faculty of Science,
University of Rabat,
Avenue Biarnay,
Rabat (Morocco).

AFRICA

6. Dr. Roger Taufflieb,
Institute of Researches Scientifique of
Congo,
Brazzaville (Congo).
7. Ato Wolde Ghiorghis Wolde Mariam,
Haile Sellassie I University,
Addis Ababa (Ethiopia).
8. Dr. Mustafa Hazzan Isaq Ishaq,

Dean, Faculty of Science, University of
Khartoum,
P.O. Box 321, Khartoum.

SOUTH EAST ASIA

9. Prof. K. N. Gatha,
Head of the Department of Physics,
University of Singapore,
Bukit Timah Road,
Singapore-10.
10. Dr. W. P. Napitupulu,
Chief Duictrate of Science Admini-
stration,
Ministry of National Research,
Taman Podfambon 3,
Djakarta, Indonesia.
11. Mr. N. G. Baptist,
President Elect & Chairman,
General Research Committee, C.A.A.S.,
University of Ceylon (Faculty of
Medicine)
Kynsey Road, Colombo-8.
12. Mr. Swasdi Dharmikarak,
Chulalong Kern University,
Bangkok, Thailand.

Foreign Scientists

In addition to the above Afro-Asian Sci-
entists, the following distinguished scientists
from U.S.S.R. and U.K. are also being in-
vited:

1. Dr. Linus Pauling, U.S.A.
2. Professor J. D. Bernal, U.K.
3. Professor C. F. Powell, President,
World Federation of Scientific Workers.
4. Professor P. Biquard,
Secretary General,
World Federation of Scientific Workers.

Some Suggestions Regarding Participation in the Symposium on "Science and the Nation"

1. The basic problem of Science in India is to gear it to the Nation Building activities.

2. The organization of Scientific Research has to be viewed as a productive process for bringing about industrial and social transformation. Like all productive efforts the investment of science for national process has to yield returns in terms of national betterment and better Scientific output in terms of improved quality of research and development. In achieving most satisfactory results it is very necessary to have maximum coordination in industrial production, technical improvements and research and development. This should not be left to the normal operations of chance, personnel contacts and other similar factors.

3. The allocation of funds for research, the scientific manpower requirement, placement and training of scientists and engineers and the strategy of research have all to be geared to the industrial and other productive targets of the Five Year Plan. The pace of national development as envisaged in our Five Year Plans can be considerably accelerated by mobilizing the technical skill in our laboratories towards designing and fabricating indigenously the plants and machinery required for developments, for evolving substitutes for deficiencies in raw materials and for suggesting methods of conservation, utilization of waste, and effective use of productive capacities.

4. There is therefore an urgent need for having both short-term and long-term plans which should be prepared in relation to our

national development plans. Allocation of funds, allocation of projects, and priorities in research should all be worked out in relation to the plan targets.

5. The main object of the symposium on "Science and the Nation" is to indicate the lines on which the integration of scientific effort with Nation Building activities can be brought about in the various sectors. For this purpose it would be necessary to:

- (a) determine the state of knowledge and technology in a particular field of application, and
- (b) indicate broadly the types of problems to be solved in order to advance in the field of production.

6. The Symposium is to take place in eight sessions and for each of these sessions one or more coordinators have been chosen. It will be the responsibility of the coordinators to initiate discussion for their respective sessions. Their main paper along with abstracts of all the papers and copies of some selected papers, would be circulated before hand to all the participants to make the discussion more fruitful.

7. The coordinators should study the various Five Year Plans including the Perspective Development Plan prepared by the Perspective Planning Division of the Planning Commission as well as the papers received in their respective sessions. In their discussion papers they should deal with the following:

- (a) Third Plan targets in their respective field.

- (b) achievements and short falls as indicated in the mid-term appraisal of the Third Plan.
- (c) review the contribution of Scientists in the field of:
- (i) Survey
 - (ii) Planning
 - (iii) Production
 - (iv) Development
 - (v) Research
- (d) In preparing the above, the salient points of the various papers received for their sessions should be incorporated.
- (e) They should indicate broadly the lacuna: in developing the technical know-how imported from abroad; in developing within the country, the production capacity utilizing the indigenous raw materials; in developing new techniques or improved methods; in devic-

ing methods for conservation and elimination of waste, and in the application of results of research. They should finally suggest remedial measures and indicate broadly the tasks which the scientists should undertake both in the present Plan and the long-term Plan.

8. After the coordinator has initiated the discussion, the authors will be given not more than 5 minutes to indicate the matters which they believe to merit particular attention. The subject will then be thrown open to general discussion. Individual contributions to these discussions must not take more than 5 minutes. The speakers are requested to bear in mind the general objective of the symposium and direct their remarks towards suggesting methods or problems for integration of science with the development plans.

9. At the end of the discussions, the coordinator will sum-up the discussion.

Members of the Reception & Organising Committee for the Symposium

1. Dr. S. H. Zaheer,
Director General,
CSIR, Rafi Marg,
NEW DELHI.

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2. Dr. N. P. Gupta,
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 45. Dr. Chipal Katti,
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 46. Dr. V. K. R. V. Rao,
Chairman, Evaluation
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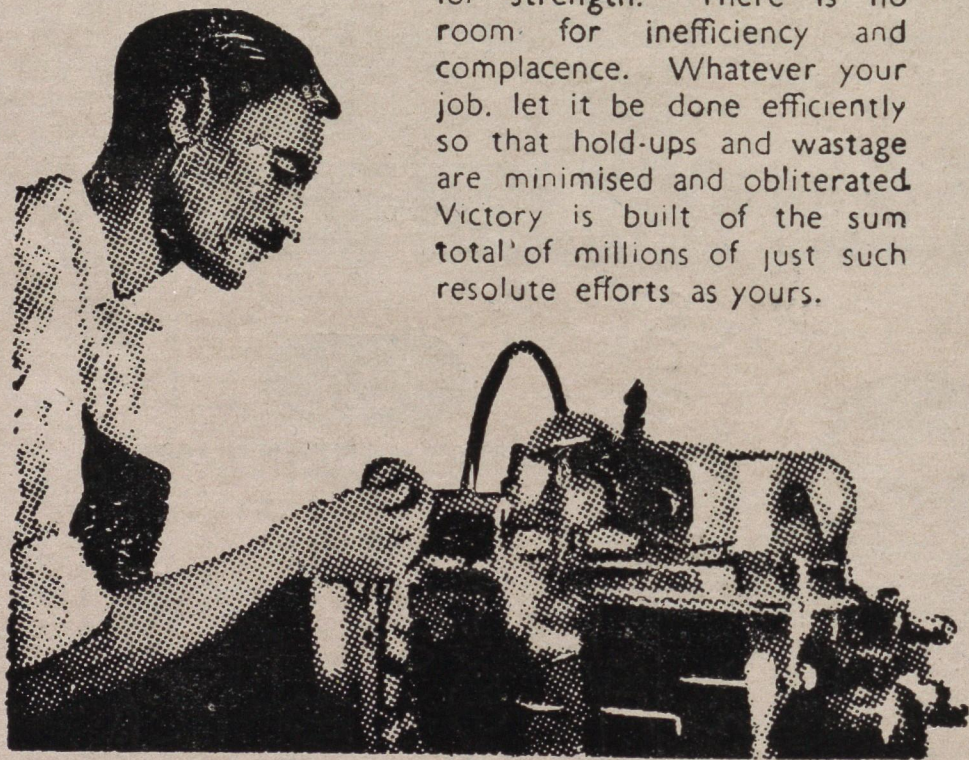


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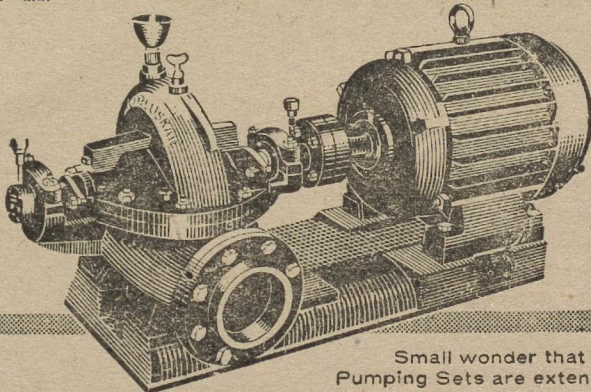
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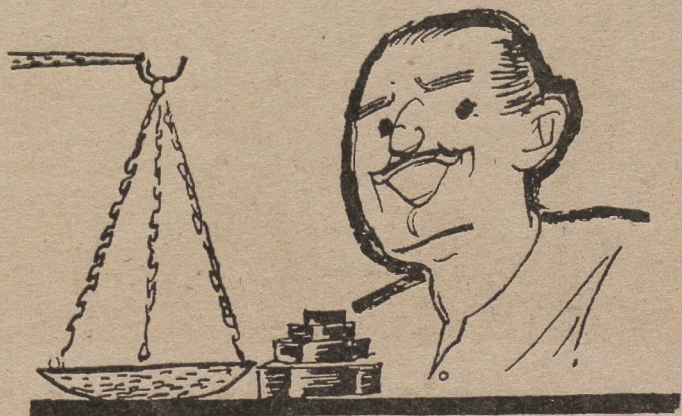
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Science has gone far since then, and today it has learned to make many and varied uses of salt. Can you imagine your common salt being turned into a number of heavy chemicals, such as soda ash, caustic soda, bicarbonate of soda, magnesium chloride, bleaching powder and bromides? Can you imagine getting along without salt in the twentieth-century?

At the Mithapur Works of Tata Chemicals, salt and other marine products are extracted from the sea and converted into these alkalis and heavy chemicals. They find their way into many other factories where paper, leather, soap, glass, textiles and pharmaceutical products are made.

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