

## II. The India of today

### The Prime Minister

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#### 'The only man in the country'

Mrs. Indira Gandhi's spectacular return to power, within 30 months of her equally spectacular defeat in March 1977, has put the Indian nation on the world map once again. Unlike the 1971 general elections in which she had a strong party and an alliance with the Communist Party of India and some other splinter left-of-center groups, in the latest election Gandhi had to fight alone against formidable combinations of rightist and leftist forces ranged against her across the country. With her own party badly divided and disorganized, with most of the traditional state bosses reduced to political impotence, the electoral victory she nonetheless scored reflects the Indian nation's confidence in her leadership at a critical juncture.



Those unacquainted with how the vast sea of Indian humanity reacts to its own problems and to events in the world were surprised by the election results. The Indian people, though poor and largely without formal education, have an earthy common sense when it comes to judging who can attend to their needs and enhance India's role in the world. Unlike the Chinese, for example, Indians, since the dawn of history, viewed themselves as part of the world community and have a well established tradition of intercourse with the world at large on scientific and philosophical problems. This tradition, which the British colonialists were aware of and sought to destroy, was resurrected by Jawaharlal Nehru whose scientific outlook influenced an entire generation of Indian youth, intelligentsia and political activists. Of all the

leaders active on India's political stage today, Indira Gandhi, more than any other, shares the nation-building outlook of her father. Therein lies the secret of her much-discussed personal charisma.

Her political psychology is the combined effect of, on the one hand, her confidence in the Indian nation's capability to take giant strides on the road to progress, and on the other, her fear and suspicion of the forces which want to prevent, even physically destroy the nation's capability to go in the direction she wants to take the country. She has a strong "voluntarist" tendency, which at critical moments leads her to take actions that appear to be "a gamble" to her less sophisticated and timid colleagues who often do not keep pace with her thinking and urge for action. One often hears Indian politicians and journalists talking in desperate tones of her style of functioning, of her "using and discarding" human instruments. But on careful checking, one cannot miss the reason for her behavior. Her experience of the so-called senior party men is simply that at critical points, instead of coming forward with principled recommendations or solutions, they invariably raise their hands saying: "You are the best judge. Do what you think best." The junior ones whom she picked up and formed have often been found assuming airs they hardly deserve, while flunking when hard and risky decisions have to be taken.

In 1965 then Prime Minister Lal Bahadur Shastri remembered Indira Gandhi only on the day Pakistani armoured columns threatened to cut the only communication line between Srinagar and the rest of India, and seize by force the Kashmir valley. In the midnight conclave, Indira Gandhi boldly endorsed a timidly put forward thought that the Indian army ought to launch a counteroffensive in Lahore to relieve the pressure on Kashmir. This was done and she went out into the countryside to mobilize the population for national defense. Behind this resolute step was her bitter experience of army officers and politicians stabbing her father in the back during the 1962 Chinese aggression against India. Again in 1965, Indira Gandhi learnt the bitter lesson of Anglo-American perfidy in dealing with India.

She has not lived down the experience she shared with

her father in 1962, when Jawaharlal Nehru was subjected to humiliating conditions proposed by the several British and U.S. delegations which visited India during that critical period. In 1971, she was faced with a grave situation, with millions of Bangladesh refugees camping on Indian soil, virtual genocide taking place in East Pakistan and Pakistani troops backed by the Anglo-Americans on the one hand, and the Chinese on the other, threatening to attack India. The ignorant U.S. population does not know the role that then Secretary of State Henry Kissinger played in humiliating India while obsessed with his notorious "China Card" doctrine.

Her internal experiences are not very different from her external experiences. Most of the party bosses responsible for her election as Prime Minister in 1966 (on Shastri's death) wanted to use Indira and her family's charisma to garner votes in the national elections of 1967. But once in power, she knew how to deal with them, using both political maneuvers and appeals to the people. The bad performance of the Congress in the 1967 elections, which can be credited to the advice of World Bank agents on major economic and fiscal policies, were used by the 'bosses' to isolate her in the party and attempt to usurp power. In the ensuing fight she mobilized all the pro-development forces, including the Communists, and launched a major offensive against the pro-British feudal princes, the banks known for their scandalous speculative policies and other shady activities.

The ensuing abolition of princes' privy purses and nationalization of major Banks changed the entire social climate in the country, clearing the way for the pursuit of a national development policy. If, with the Indo-USSR friendship treaty of 1972, Indira Gandhi checkmated Kissinger's "China Card," with anti-feudal and anti-speculator steps on the domestic scene, she created conditions in which the economy could grow, and in which Indian scientists could execute an underground nuclear test in the Rajasthan desert. In the midst of these struggles, Indira Gandhi sharpened her skills in dealing with both her internal and external adversaries. She did not entirely perfect them. Her defeat in 1977 can again be traced to her failure to comprehend the trap laid by the World Bank, with its slogan "population control is the greatest input in a developing country like India."

When people refuse to offer real advice on how to meet a particular challenge and only come forward with: "don't do this, don't do that," her natural reaction is "let me face it." She is at her best at such challenging moments. No wonder, her innate strength and determination to act boldly in difficult situations, can be seen at the present moment of grave international crisis. President Giscard found in Indira Gandhi an iron willed but astute statesman. As the Indian soldier says of Indira Gandhi, "She is the only man in the country."

## The economy

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### An energy shortage and inflation

In an interview given to this reporter one day before her swearing in as India's Prime Minister, Indira Gandhi stated unequivocally that the first priority of her administration would be the economy. "The situation is very much worse than I had imagined," she added.

The economic situation in India is indeed grim. The Reserve Bank of India and the Planning Commission Deputy Chairman have admitted that GNP for 1979-80 may register a *decline* over the previous year; at best it will register zero increase.

While agriculture—especially the winter crop—was hit badly by one of the worst droughts in centuries, industry has fared no better. Industrial growth from April to November fell by 0.5 percent over the same period the previous year. Officials are now saying that industry will be "lucky" if the fiscal year ends with a zero-level of growth.

#### The key sectors

While the expected decline in agriculture can be blamed on the drought, the overall crisis in the economy is the direct result of "mismanagement" by the Janata and Lok Dal governments in the vital sectors—energy, coal, transportation, distribution, etc.—which are all under government control. This is established by a simple review of the present state of the key sectors of the economy.

**Coal.** Production may not reach 90 million tons, despite the fact that in 1978, it reached 192 million tons. Since India's energy sector is heavily dependent on coal-fired power, this shortfall has wreaked havoc. The severe power blackouts in the Calcutta and Bombay regions earlier this year—caused by bad maintenance at thermal plants and low water-levels at hydroelectric stations—have continued throughout the year due to coal shortages. At present 600 megawatts of thermal capacity is lying idle because of coal shortages.

Ironically one of the main reasons given for the decline of coal production is the power shortage for the coal mines. In the year ending November 1979, the official estimate is that 4.7 million tons of coal production were lost due to lack of power.

Unless urgent measures are taken to rapidly upgrade production and transportation of coal, shortages are expected to continue. The caretaker Lok Dal government reportedly ordered a slowdown in the construction of two 1,000 megawatt superthermal plants, since coal supplies will not be available to fuel them.

One expert in the area reported that the previous governments passed up an opportunity to boost a generation of old 250 megawatt plants to 330 megawatts through a relatively modest investment in modernization.

**Steel.** Despite Janata estimates that production in 1978-79 would reach 8.8 million tons of saleable steel, since 1976-77, output has declined from 6.9 to 6.5 million tons. This year it is expected to fall even further—at mid-year it had declined by 9 percent over the previous six-month period. The collapse in pig iron has been even more drastic—in the first seven months of 1979 it went down by 45 percent over the same period in 1978. The reasons given for the decline of steel production are: power cuts, shortage of coking coal, transport bottlenecks and labor unrest. For example, the supply of coking coal has gone down by more than one million tons which will translate into a fall of 0.7 million tons of steel ingot and 0.5 million tons of pig iron.

The chairman of the Steel Authority of India has warned that the stocks of coking coal are precariously low and steel plants have been operating with one sixth the desirable stocks of 600,000 tons of coking coal. This, combined with erratic power supply, he warned, will spell ruin for the steel industry.

**Aluminum.** Because of severe power shortages this energy-intensive industry is expected to fall by about 16 percent over the previous year. Against a total demand of 325,000 tons, production may not surpass 180,000 tons. The shortage of power is most visibly reflected in the low capacity utilization, only 55 percent compared to 76 percent in 1976-77.

The shortfall in aluminum production has affected thousands of smallscale units manufacturing cables, which are getting only one fourth of their requirement of aluminum.

**Cement.** During 1979, production declined by 8 percent resulting in a shortfall of about 7 million tons. Throughout the year capacity utilization declined steadily from 95.1 percent in March to 77.2 percent in October. The shortfall in cement production, expected to be around 7 million tons, is likely to have a very adverse impact on construction activities, pushing prices up and rents.

**Phosphate fertilizers.** Despite the “rural bias” of the previous governments, production of this vital input fell by two percent during the first seven months of the current fiscal year.

**Copper.** Production of blister copper during April to October of this year was 9.5 percent above the corresponding period last year.

### Other indicators

**Consumer goods.** The fall in industrial production has carried over into the consumer goods sector. For example, sugar production alone has declined by around 34 percent as compared to the figure for the corresponding period of the last crushing season. During the first two months of sugar cane crushing in 1979-80, the total sugar production was 295,000 tons, as against 395,000 tons during the corresponding period a year ago.

Other consumer goods sectors have been equally hard hit. Cotton fabrics production has fallen by 7 percent; tea by nine percent; scooters and motorcycles by 5 percent, and cooking oil by 9 percent.

**Private investment.** Despite much propaganda when the Janata government took office that the climate for private sector would improve, just the opposite has taken place since 1977. The crisis in power, steel, transport and other basic sectors has had an obvious impact on the private sector. Despite all types of government concessions, no growth rate in the private sector is visible, and the incidence of “sickness” among industrial units has grown.

Assistance given by the banking system to newly established companies declined from 2.51 billion rupees in 1977 to 2.18 billion rupees in 1979. At the end of September 1978, the number of medium and large scale “sick” units increased from 270 to 334. The same situation carries over to the larger public sector. The number of registrations of government companies during the three year period went down from 54 in 1977 to 33 two years later.

**Inflation.** Inflation during the past year—which had a major impact on the mood of the electorate—has also reached dangerously high points. By last November, the wholesale price index had risen from 184 to 221—during July it rose by 1.3 percent per week.

The inflationary problem is most sharply reflected in the Cost of Living indexes (COL). While the COL for industrial workers had *declined* during the two years (1975-77) of Gandhi’s “emergency rule”—by 1.3 percent and 3.8 percent, respectively—it has increased steadily under the Janata and Lok Dal governments. The condi-

tion of agricultural workers has deteriorated even more sharply. In 1976-77 the agricultural COL declined by 4.7 percent, but in 1977-78, it increased by 6.9 percent. In August 1979, it was 10.3 percent higher than in March 1979.

### **The decade of the 1980s**

Despite the bleak current picture, the crisis in the Indian economy is not an endemic problem. The current sorry state is due to explicitly anti-industrial "ruralist" policies and should serve as a lesson to the proponents of "appropriate technologies" for the Third World.

Under the Janata, a deliberate effort was made to end the policies of Jawaharlal Nehru—building up the strategic heavy industry and energy sectors of the economy. Finance Minister Charan Singh—who later became Prime Minister of the caretaker Lok Dal government—is a spokesman of the landlord peasant community (the Jats) and insisted on implementing World Bank "rural bias" policies. The Janata's economic priorities were: 1) greater emphasis on solar and bio-gas energy; 2) a policy of "de-tractorization" for the countryside (to save fuel and increase employment); and 3) greater utilization of "animal and human labour."

The Janata leaders were evidently blind to the fact that they were not dealing with a backward underdeveloped economy, but with the tenth largest industrial economy in the world. Despite the backwardness of its agricultural sector, since independence in 1947, India has built up a broad-based industrial economy with a well-established capital goods industry and, most important, the third largest pool of scientists and technicians outside the U.S. and Soviet Union.

Gandhi has emphasized the need to revive India's efforts to modernize. To carry out her longer term perspective, the new government is expected to strengthen the Planning Commission. In one of her first statements following her election victory, she attacked the Janata for turning the Planning Commission into a non-functional entity.

In her first major speech to Parliament on Jan. 30 Prime Minister Gandhi made it clear that it was necessary to restore the long-term planning process. The Janata and Lok Dal "have been caught in last moment decisions," she stated. "We need a long term perspective."

However, given the magnitude of India's problems—as shown in the fact that 80 percent of the population still lives in the rural sector—a formidable development effort will have to rely on cooperation from abroad. Yet, with its broad-based industrial infrastructure and large scientific and technical manpower, perhaps no country in the Third World is as well situated as India for such a take-off in development.

—Paul Zykovsky

## **The nuclear program**

### **A comprehensive plan for atomic energy**

During his visit, French President Giscard referenced the great advances made in Indo-French collaboration in the fields of applied mathematics, data processing, solid state physics, microelectronics, biophysics and electrical engineering.

No other country in the Third World has developed these areas of knowledge on a par with the industrialized countries. Now India is at the stage that not only can it assimilate advanced countries' technologies but, scientists tell you, they can contribute to advancing the frontiers of science. Most Indians would proudly tell you that India has made a major contribution to international fusion research, the space program and many other advanced technologies. Not just by chance. India has the third largest pool of scientists and engineers in the world.

As dramatic as theoretical achievements, Indian scientists are getting ready to unveil a big surprise. In 1980, 50 miles from the southern coastal city of Madras, there will open Asia's first experimental fast breeder reactor, built by Indian know-how with French design.

The nuclear energy plants dispersed across this nation not only hold the promise of future energy abundance. They are the concrete symbols of this country's ability to move forward.

### **Essential to nation-building**

Atomic energy development, from the outset, was deemed essential to the nationbuilding process by Prime Minister Jawaharlal Nehru, and also by his daughter, Indira Gandhi.

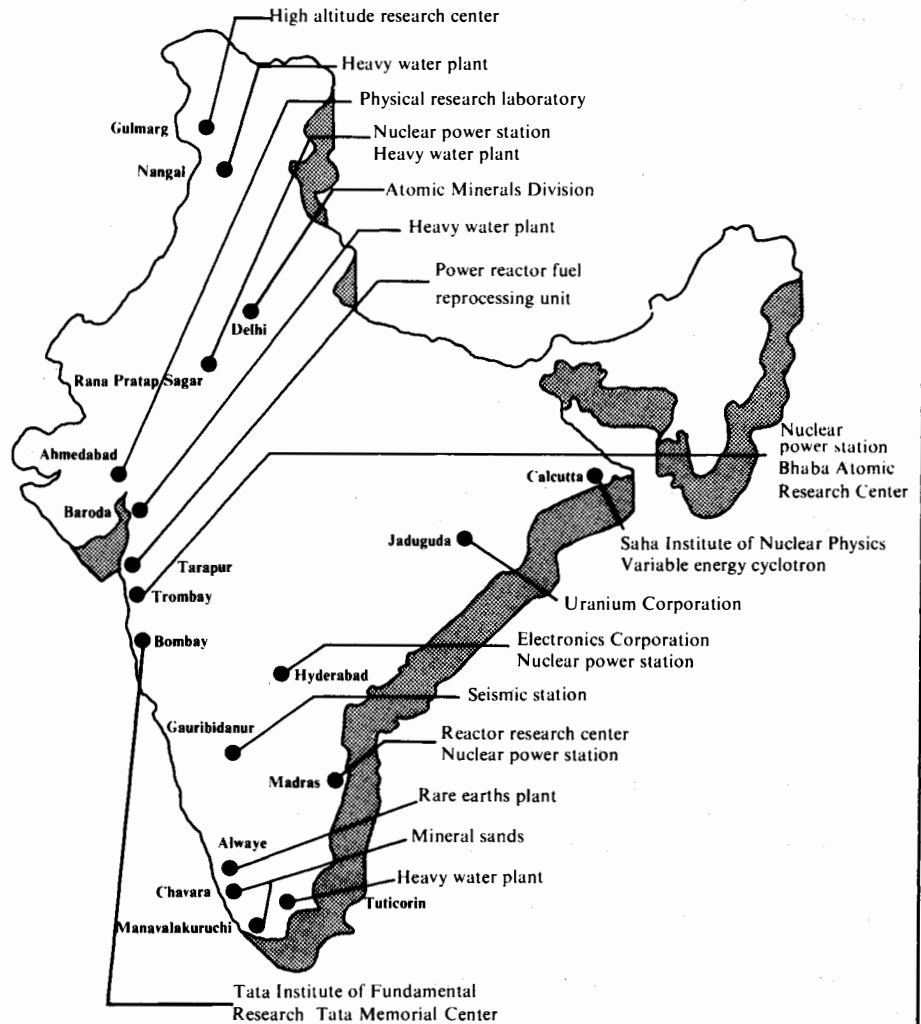
In 1943, Homi Bhabha, an enterprising physicist, wrote to Dorabji Tata, head of the Tata industrial family, asking him to "create the conditions through financial support to facilitate the development of science in India at a pace the talent in the country would warrant." The Tatas underwrote the creation of the Tata Institute of Fundamental Research in 1945, and even before independence, it became the "cradle" of a peaceful nuclear energy program.

In 1946 a provisional Atomic Energy Commission

## India's Nuclear Industry

In 1955, Homi Bhabha, head of the Indian nuclear development program, stated the nature of India's thinking on energy questions, the reasoning that led to the nuclear industry located on the map. Said Bhabha:

"The total per capita consumption of energy in the United States is equivalent to the burning of some nine tons of coal per annum per capita. The same per capita rate of consumption in India, assuming a population of 400 million or so, would correspond to the burning of 360 million tons of coal per annum. Let us leave out the crowding economy for the moment. The utilization of a potential 35 million kilowatts of hydro-electric power would make little difference to this arithmetic, since installed hydro-electric capacity of 35 million kilowatts corresponds to an annual coal consumption of 90 million tons. We therefore come to the inescapable conclusion that the resources of hydroelectric power and conventional fuels in India are insufficient to enable it to reach a standard of living equivalent to the present U.S. level. That is what we must strive for."



was created under Bhabha; in 1953 it became a fully empowered partner of the Indian Planning Commission. In 1954, the AEC was formed, and by 1955, Asia's first experimental reactor outside the Soviet Union had been built.

India's interest in fusion development began almost as early. Homi Bhabha boldly told the 1955 International Atomic Energy Conference: "It is well-known that atomic energy can be obtained from a fusion process as in the H-bomb, and there is no basic scientific knowledge in our possession today to show that it is impossible for us to obtain this energy from the fusion process in a controlled manner. The technical problems are formidable, but one should remember that it is not yet fifteen years since energy was released in an atomic pile for the first time by Fermi. I venture to predict that a method will be found for liberating fusion energy in a controlled manner within the next two decades. When that happens, the

energy problems of the world will be truly solved forever, for the fuel will be as plentiful as heavy hydrogen in the oceans. The so-called barriers of science have again and again in the past been proven surmountable by man."

### A three-stage nuclear plan

In India's domestic nuclear program, three stages were envisioned. The first stage was based on natural uranium and its use in reactors moderated by heavy water. As India's natural uranium resources are limited, not many of these heavy water reactors could be built. A by-product of the reactors of this first stage was plutonium which, when recovered from the spent fuel, can be used for the next generation of reactors—the fast breeders which yield more fuel than they consume. The third stage envisioned was the use of breeders to convert another fertile material, thorium, into uranium-233.

When sufficient uranium-233 is accumulated, thorium breeders could be operated on a thorium-233 cycle.

The last phase the late Bhabha foresaw was fusion power.

India has by no means been able to live up to the timetable of this AEC blueprint, for a variety of reasons not of Indian making. But it has attempted to travel this road, and in the process built up an impressive array of nuclear-related programs and spinoff benefits.

The star of the program is the Bhabha Atomic Research Center (BARC) located outside the western industrial hub city of Bombay. It contains over 10,000 personnel, about half of whom are skilled scientists and technicians. BARC itself houses four research reactors. Apsara was built in 1956 through Canadian collaboration; Cirus in 1960; Zerlina, totally Indian made in 1961, and Purnima in 1972. At the same facilities, one finds a uranium metal plant, a fuel elements fabrication plant, a plutonium plant and a large civil engineering staff.

The BARC effort has resulted in spinoff industries across the country (see map). But thus far, only four reactors are commercially active. Three are CANDU heavy water plants; one is an enriched uranium plant at Tarapur. At Kalpakkam, Madras, scientists hope to replicate, for the fast breeder program, the backup facilities that BARC has for the CANDU heavy water reactors. The Indian capacity to build nuclear plants has progressively increased since the first plan. From the 66.3 percent foreign component in the Tarapur nuclear plant, it came down to 20.3 percent in Kalpakkam. The next plant will be 100 percent Indian-made.

Bhabha's strategy to involve international cooperation in such a way that domestic skills are enhanced is now bearing fruit.

Applied nuclear energy work has also been emphasized. Three projects best illustrate the efforts:

- BARC scientists have estimated that through the use of peaceful nuclear explosions (PNE) on the model of India's 1974 Pokharan explosion, harbors can be built at a cost ten times cheaper than conventional means. India has a huge coastline, but few natural harbors.

- In 1969, a Tata Institute of Fundamental Research (TIFR) scientist did an extensive study of using PNE to create water reservoirs.

- In 1966—BARC initiated studies for "Nuclear Powered Agroindustrial Complexes—Nuplex." BARC proposed two areas—the Gangetic plain and the western Saurashtra region. Its aim was to integrate around a nuclear energy center a complex of industrial and agricultural activities. BARC estimated that the project could feed 30 million people!

The Nuplex came to be known by Indian scientists as "strategy for survival."

—Paul Zykojsky

## An economic ambassador

### MECON: India's export of technical know-how

With its large number of scientists and engineers, India today is one of the countries that can play a major role in the development of the more backward countries of the Third World. Already in the past few years tens of thousands of Indian skilled and semi-skilled workers have participated in development projects in the labor-scarce countries of the Middle East.

Provided the Indian economy moves ahead in the next few years, there is no doubt that India, through its expertise, can serve as the workshop for the development of the entire Indian Ocean littoral region from Africa to Southeast Asia.

One of the entities which will undoubtedly play a leading role in this process is Metallurgical and Engineering Consultants (MECON) established over 20 years ago as an offshoot of the public sector steel manufacturing company—known today as Steel Authority of India (SAIL).

Today MECON is the largest firm of its type in India, employing over 2,000 engineers. Even by international standards, it is a unique firm, offering a broad range of engineering and consultancy services, from general project reports and site-selection to detailed equipment design and commissioning for rolling-mill machineries.

While MECON specializes in the steel industry, its expertise extends to other important sectors as well, including power distribution, aluminum, mining and ore beneficiation, refractories and chemicals.

D.K. Kengupta, the Chief Resident Manager of MECON in New Delhi, told this reporter that in the past three years his corporation has begun to extend its activities outside of India. One year ago MECON signed a contract with the Nigerian government for consultancy, design and project supervision for two, one-million ton steel plants. In the more recent period, it has been commissioned to do feasibility studies for steel plants in Syria, Dubai, Abu Dhabi, Bangladesh and Liberia, a market survey for cold-rolling products in Indonesia, and in January of this year, MECON and the well-known Swiss aluminum company, Aluisse, established a joint capital venture—Indo-Swiss—to offer a broad scope of

engineering and contracting services in the field of aluminum.

Sengupta indicated that MECON's entry into the competitive world of bidding on international projects had initially met with hesitancy in Third World countries over India's ability to compete with the industrialized nations. But now, this view has shifted, and many developing countries swear by MECON's expertise.

What has made MECON attractive to other developing countries is its unique history and expertise in working in underdeveloped economies like India's own, with problems of lack of necessary infrastructure and skilled labor.

MECON grew out of India's modern steel industry, established less than 25 years ago under Nehru. India has built up four major steel plants, capable of producing approximately 10 million tons of steel per year.

With every new plant, India emphasized the need to increase the domestic input of equipment and machinery. Thus while the first steel plants built after independence at Rourkela and Bhilai relied on equipment and expertise from West Germany and the Soviet Union, the newest plant at Bokaro has relied on Indian input for 90 percent of building structurals, 100 percent of technological structurals, 65 percent of mechanical equipment, 48 percent of electrical equipment, 80 percent of instruments and 60 percent of refractories.

Because MECON grew out of India's own development of a domestic steel industry, it has first-hand knowledge of the problems developing economies face when undertaking advanced technology projects. As an autonomous part of the Steel Authority of India Ltd. (SAIL), MECON can offer a wide-scope of services to other developing countries. For example, SAIL operates technical training institutes at its plants in Rourkela, Bhilai, Durgapur and Bokaro. Aside from training Indians,

these have trained more than 550 people from countries like Nigeria, Afghanistan, Iran, Indonesia, the Philippines, Sri Lanka, Burma, Korea, South Vietnam, and even West Germany.

In addition, MECON offers the services of Hindustan Steelworks Construction Ltd. (HSCL), a subsidiary of SAIL and the largest government owned construction company. According to SAIL's own brochure, "the strength of HSCL lies more in its enormous skilled manpower than merely in equipment and other resources. Over 21,000 men work at HSCL, including 1,600 engineer officers, 1,700 supervisors and more than 17,000 workmen." HSCL's construction projects extend beyond the steel sector to construction of large industrial projects, power plants, bridges, dams, docks, townships, mines, roads, etc.

One of SAIL's brochures directed at other developing countries convincingly explains why India, if it moves forward with an ambitious development program, can become the "workshop" for development of the region:

"The growth of India's steel industry over the last 20 years is a living example of how the most sophisticated technology can be adapted to suit the needs of a developing country.

"Until 1956, the steel industry in India was practically non-existent. This was a time when the need for industrialisation was imperative, but India could not simply construct her steel plants, hire the engineers and go into production.

"The technological infrastructure to support such a gigantic and sophisticated programme did not exist.

"So India launched a massive, integrated programme for steel development. Collaboration was set up with the industrially advanced countries and a flood of expertise and experience poured into the country.

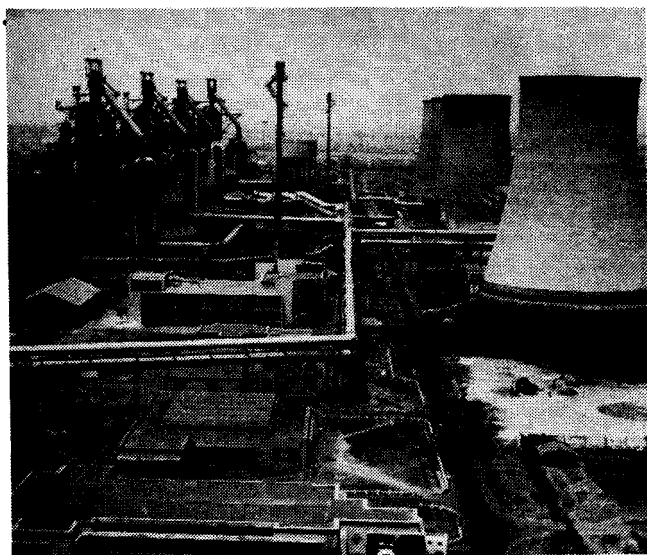
"But all through, the battle was for self-reliance. In every field of steel technology from consultancy to design to engineering to construction to training, the emphasis gradually shifted to local talent.

"And today, the steel industry in India is in a position not only to meet the country's own demands, but to export a substantial quantity of its production, share its experience in the field of technology and construction and provide training to the technicians, technologists and managers from other countries.

"And all of this cumulative experience of the Indian steel industry—first hand knowledge of the problems that a developing country has to face—is now available through the Steel Authority of India Ltd.—SAIL in short—the 22,000 million-rupee holding company which accounts for nearly 30 percent of the total investment by the Government of India in public sector enterprises.

"SAIL is thus the Government of India's ambassador for sharing of technology with friendly countries."

—Paul Zykojfsky



The steel plant operated by SAIL at Durgapur.