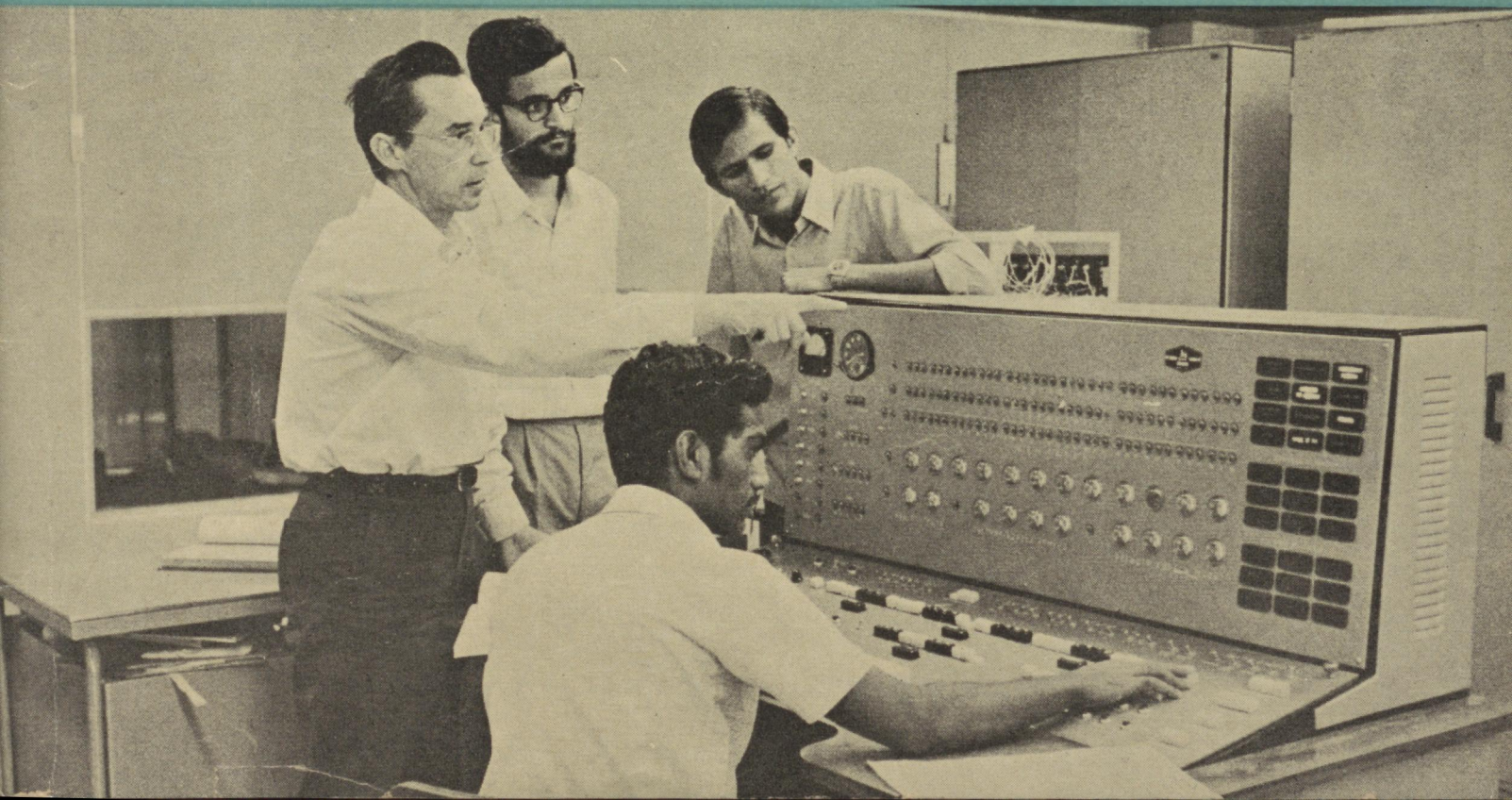




UNITED NATIONS
SYSTEM
IN INDIA



PARTNERSHIP IN
DEVELOPMENT
AND HUMAN WELFARE
1973-74





Mr. Rudolf A. Peterson

UNDP Administrator's Message

Over the years, India and the United Nations Development Programme have developed a unique partnership. In the following pages, eminent Indians and UNDP experts attest to the importance of this constructive collaboration.

The India-UNDP partnership programme is by far the largest in which UNDP is involved. During the 1972-1976 period, UNDP expects to provide some \$ 50 million in technical assistance for this joint venture. In relation to India's size, its own efforts and to its development needs, UNDP inputs are small indeed, but, in many vital spheres, such as science and technology, they are crucial.

As this booklet illustrates, development works. Changes for the better are possible. Application of effort and skill does bring results.

From time to time we need to remind ourselves of these truths. Development is not an institution or an abstract process. It is people working long and hard to build a better life for themselves and others.

The commitment to development shown by the people and the Government is the key to whatever successes that have been achieved so far in India. And I have no doubt that as this commitment grows in the years ahead, the success of our cooperative efforts will grow with it.

By working together, we — the people, the Government, and the United Nations development system—can write many more pages of achievement in the years to come. We can make this Second Development Decade fulfil its promise of a better life for the people of India and their neighbours around the world.

Contents

	<i>Page</i>
Glimpses of the UN System	5
What UNDP Does for India	9
Water and Power Grids	10
New Tools for Agriculture	13
A White Revolution	17
New Challenges	20
New Technologies	21
Surveys of Fisheries	22
No Truce with TB	25
Health and Self-help	27
Filling Gaps in Technology	29
Training for Toolmakers	32
A Job with a Challenge	34
Tourism in India	36
Selected list of UN-assisted Projects	39

Front Cover :

Supply of Clean Water

Photo : WHO

Training in Computers

Photo : UN

The UN System helps developing nations help themselves by serving as a catalyst. UNDP country-programming has added a new dimension to this partnership.

Glimpses of the UN System

When man has reached the moon and is seeking to soar to more distant planets, it is unthinkable that poverty cannot be abolished on earth. Hundreds of millions of people in Asia, Africa and Latin America are on the move to improve the quality of their life; they no longer accept crippling poverty and backwardness as an inevitable way of life or destiny. With the ever-widening gap between the rich and the poor and the population growth, the situation is almost as grave a threat to peace as war itself. The responsibility of the international community to meet the challenge is greater than ever before.

That is why the United Nations has mobilised over 80 per cent of its resources and personnel for the social and economic advancement of people everywhere. The UN Charter itself carries a mandate "to employ the international machinery for the promotion of the economic and social advancement of all peoples." Even as the UN forum has helped enable millions in Africa, Asia and elsewhere to throw off the colonial yoke and taste and enjoy political freedom, it is called upon to make that freedom stable and meaningful by redoubled efforts to bring about one economic world.

A Catalyst

It is recognized that every nation has to mould its destiny according to its genius with the hard work of its people and the natural resources it possesses. The UN and its agencies serve as a catalyst to quicken the tempo of economic and social development and steadily liquidate poverty, illiteracy and lack of opportunity. UN assistance, based on requests from each country, has necessarily to be related to the level of a country's development, from an integrated planning survey of resources in the case of the least developed countries to filling

in the gaps of a self-generating economy as in India.

Two major arms of the UN system which provide the funds and expertise for developing countries are the United Nations Development Programme (UNDP) and the World Bank and its allied International Development Association (IDA). While the UNDP meets the pre-investment requirements of specific sectors of an economy, the World Bank and IDA give loans of different kinds for investment, including follow-up action on projects executed with the aid from UNDP or from bilateral agencies. There is close liaison between them to tackle problems of malnutrition, unemployment and population control and to inject a sense of social justice into the whole process.

Country Programme

UNDP is assisted by most of the other UN agencies in executing this global programme in 135 countries, involving an outlay of \$ 274 million in 1972 alone. For many reasons, 1972 was a year of far-reaching significance in the history of UNDP. It marked an era during which it moved along a road of expansion, reorganization and innovation. The most significant development was the launching of what is now known as "country programme", evolved on the basis of the recommendations of Sir Robert Jackson's "capacity study" to make UNDP a more effective instrument for serving the developing world.

The broad objectives of programming are:

... Planning of UNDP assistance on a long-term basis in order to enable developing countries to utilise it for the furtherance of their medium and long-term plans in an integrated manner, taking into account the

- foreign aid available from other sources.
- ... Enhancing the capacity and efficiency of UNDP management, in cooperation with participating agencies, to handle expeditiously and efficiently a programme in 1976 at least twice as large as in 1970 and to ensure better impact of that aid on the developing world.
- ... Wider powers for Resident Representatives to approve small projects of the value of \$ 100,000 and authorise extension or curtailment of the projects approved by the Governing Council within the financial ceilings.
- ... Decentralisation of authority for speedy action through four newly established regional bureaus to sanction specific projects once the country programmes and inter-regional and global projects have been approved by the Governing Council of UNDP.
- ... Strengthening communication support for projects and country programmes through its overall information set-up and the centre established at Bangkok as it has been found by experience that a more sustained and intensive programme of communication, demonstration, education and extension is required to achieve the objectives of each project.
- ... A supplementary provision of about \$ 35 million for special measures to aid the least developed among developing countries (mostly landlocked).

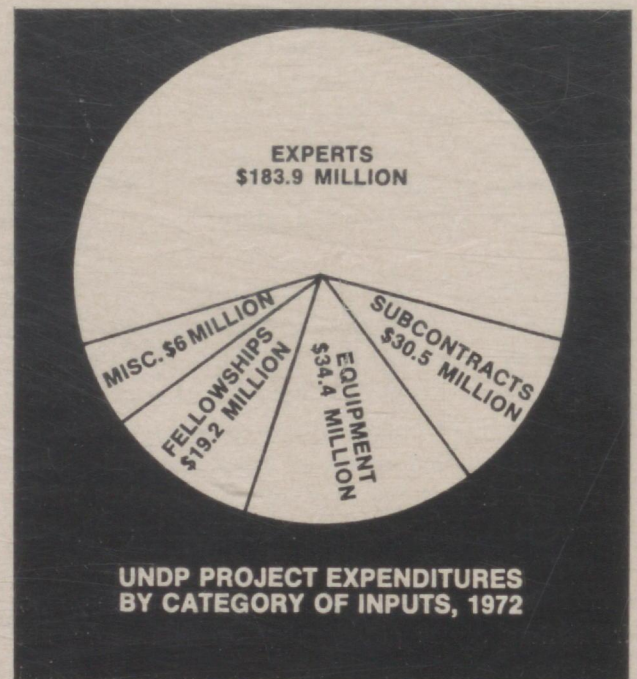
Answer to Challenge

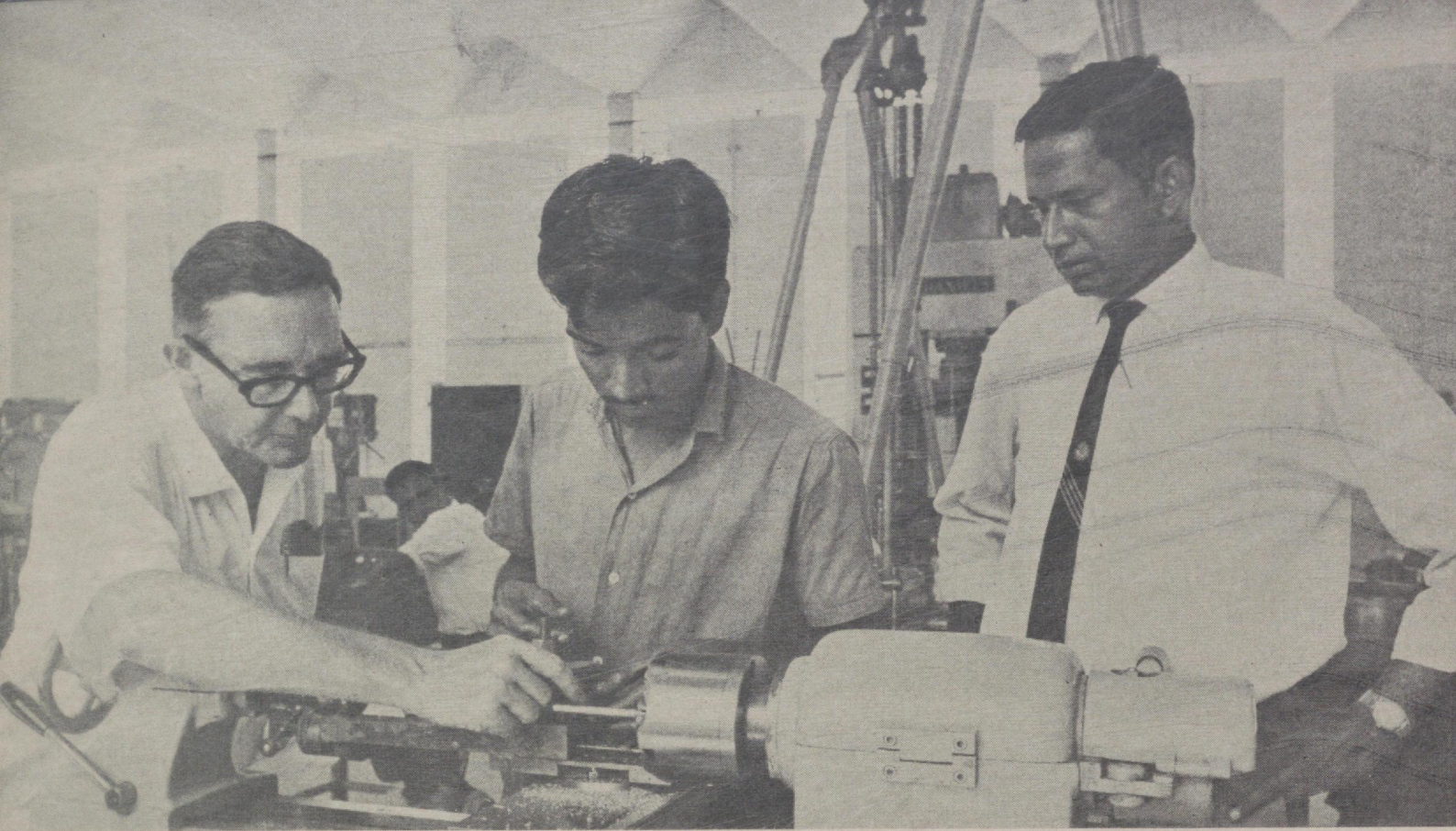
Mr. Rudolf Peterson, the Administrator of UNDP, is convinced that the answer to the challenge of the complex problems of development in which advances made by developing countries in the past are being neutralised by the persistent phenomenon of underdevelopment—due of course to growing population and wider expectations—lies in a major managerial effort, mobilising highly trained men and women equal to the novel tasks and sustaining the extraordinary energy that country programming has generated in all those associated with it. In

discharging these responsibilities, the UNDP Administrator has the assistance of Mr. Bert Lindstrom, former President of the Gotesborgs Bank of Sweden, and Dr. I.G. Patel, formerly Secretary for Economic Affairs in the Government of India. While Mr. Lindstrom is responsible for day-to-day administration, Dr. Patel directs the overall programme coordination and policy planning of UNDP.

The country programme was launched without a break in the momentum of development operations. In 1972, 135 countries and territories around the world received assistance from UNDP. Some 6,000 large-scale and small-scale projects were under execution; and field work on many other projects was completed. Globally, UNDP's contribution to project field operations reached an estimated \$ 274 million. For every dollar spent by UNDP there was substantial matching contribution from each country concerned in the form of land, buildings, counterpart staff and indigenous equipment. The UNDP contribution was mostly used for:

- payment of the services of 11,000 experts and consultants of 111 different nationalities;
- a little over \$ 30 million worth of modern equipment has been added to many million dollars





Training in Plastics

Photo : ILO

worth already supplied, which has become a permanent asset to developing nations;

—the award of 6,400 fellowships to nationals of developing countries for advanced study and training abroad.

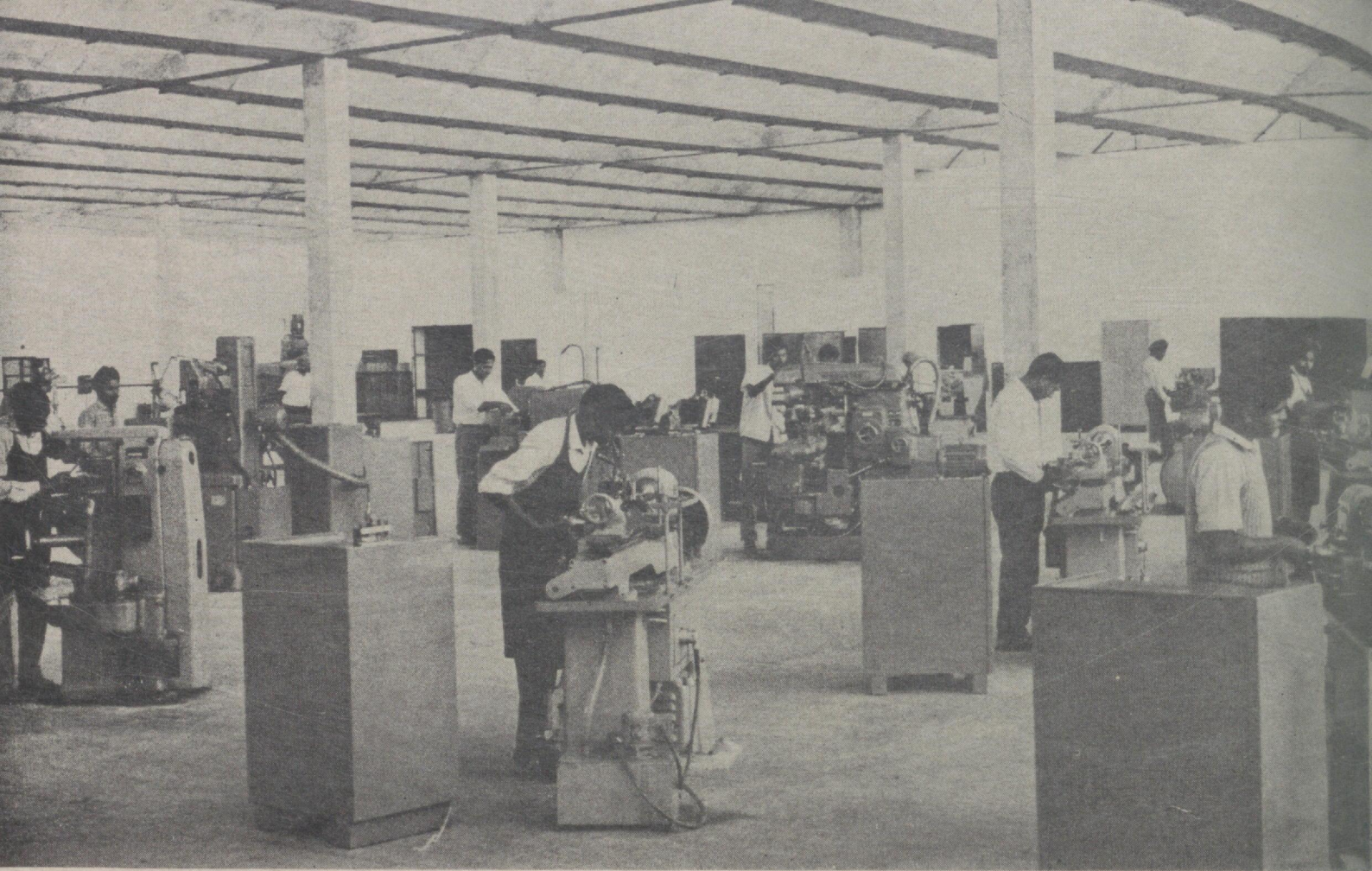
While 38 per cent of the experts came from three principal suppliers—France, Britain and the United States—countries receiving UNDP assistance themselves furnished about 30 per cent, one of the principal sources being India which supplied 5 per cent (475 experts) of the total. The big four of the UN family—the United Nations itself, ILO, FAO and UNESCO—together accounted for some 75 per cent of all the moneys expended on UNDP-financed project inputs.

As a result of the effort since 1959, nearly \$ 9 billion of investment capital has been attracted to UNDP-supported development work; more than a million students have attended institutions established or strengthened with UNDP help; and about 400 applied research centres in about 100 countries have been set up or expanded with UNDP support.

UNDP Role in India

Since the attainment of freedom, India has been engaged in the Herculean task of economic and social reconstruction to raise the standard of living and open out new opportunities for a wider and varied life for its large population—575 million in 1973. In this gigantic task, various agencies of the UN have made a notable contribution. Apart from the World Bank and its allied IDA which have provided capital investment loans amounting to over \$ 3,634 million, the UN system has been currently contributing at the rate of \$ 35 million a year. Under the Country Programme, with accent on science and technology, UNDP inputs alone are expected to be of the order \$ 88 million for the remaining period of the Fourth Plan and the entire Fifth Plan, although the Governing Council has so far approved \$ 50 million to be spent up to 1976.

According to Mr. M.G. Kaul, Secretary for Economic Affairs, the assistance of UNDP "is of the greatest value because it is entirely untied to any particular country and provides the best available



A Precision Workshop

Photo : UNESCO

assistance in terms of quality and acceptability. It ensures progress in various sectors at the desired velocity and level of sophistication."

The World Food Programme (WFP) is another UN agency collaborating with the Indian authorities for improving the lot of the people, especially in the countryside. A little over \$ 106 million have been allocated to India in the form of milk powder, butter oil and beans to provide nutritious food to children in schools and social welfare institutions, generate employment opportunities in development projects and to improve the livestock. Nearly half the WFP aid to India—\$ 56 million (Rs. 42 crores)—has been earmarked for a nationwide milk development programme known as Operation Flood. The object of this dairy project—the largest in the world—is to modernise the country's dairy industry, provide additional income to rural folk and improve milk supply in the four metropolitan cities of Delhi, Calcutta, Madras and Bombay.

Deeply engaged in social welfare and humanitarian activities is the United Nations Children's Fund (UNICEF). The agency spends in India about \$ 8 million (nearly Rs. 6.5 crores) annually on basic health services, improvement of village water supply, maternal and child health care and high protein food development and applied nutrition. UNICEF plans to spend \$ 60 million during the Fifth Plan in assisting various projects, including hard-rock drilling and supply of pumps, for an assured supply of drinking water in many parts of the country.

Four other important UN agencies which are engaged in specialized work are the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Labour Organization (ILO). Besides their own financed projects, they function as executing agencies for UNDP.

What UNDP does for India

Here are some of the highlights of UNDP assistance to various sectors of the Indian economy:

- | | |
|--|---|
| <p>Agriculture : Exploration of groundwater resources in selected areas in Tamil Nadu for triple cropping and in Rajasthan, Gujarat, Punjab and Haryana to provide drinking water and limited irrigation facilities; nuclear research in agriculture for increased and intensified food production and livestock improvement; fishery development on the west and east coasts of India; improvement of cattle breeding and milk yields; development of sheep and wool in eight states; and farmers' training programmes.</p> <p style="text-align: center;">* * *</p> | <p>production of synthetic fibres; leather goods development; industrial application of large radiation sources; space technology and remote sensing; textile research; advance technology in solid state electronics; and possible supply of and training in computer equipment.</p> <p style="text-align: center;">* * *</p> |
| <p>Water & Power : Feasibility study of the Ganga-Cauvery grand canal as part of the National Water Grid; water and land management in Chambal; cavitation and coastal engineering research and hydraulic instrumentation at Poona; power research at Bhopal and Bangalore; improvement of flood forecasting systems; and applied earth sciences research.</p> <p style="text-align: center;">* * *</p> | <p>Mass Com- munication : Television training and use of satellite communication for educating rural population in modern farm techniques, family planning, hygiene and environment; and the use of television for science education at all levels.</p> <p style="text-align: center;">* * *</p> |
| <p>Education : Postgraduate education of engineers; establishment of centres of excellence for postgraduate agricultural education; creation of centres of advanced studies on scientific subjects; establishment of the National Institute of Foundry and Forge Technology at Ranchi.</p> <p style="text-align: center;">* * *</p> | <p>Industry & Trade : Mineral development in Tamil Nadu and Uttar Pradesh; development of export-oriented goods and product adaptation for export and research and surveys for export promotion; and training abroad of officials for export promotion.</p> <p style="text-align: center;">* * *</p> |
| <p>Science & Technology: Assistance to national laboratories controlled by the Council of Scientific and Industrial Research; pilot plant for</p> | <p>Employ- ment : Training in plastic industry in Madras; tool making and tool designing in Hyderabad; setting up of institutions of advanced vocational training; training of craftsmen for industry; modernising housing factories to build more and better houses; and dairy development to supplement rural income.</p> <p style="text-align: center;">* * *</p> |
| | <p>Tourism : Establishment of an institute for training in all aspects of tourism; development of Gulmarg and other hill tourist and winter sports resorts; and technical advice on the improvement of beach resorts at Kovalam, Goa and Mahabalipuram.</p> |

In two crucial sectors of the Indian economy—water and power—UNDP has made a notable contribution.

National Water and Power Grids

By Dr. K. L. Rao

Water and Power are the twin keys to the economic and social emancipation of any nation; more so for India where uneven distribution of water resources and continuing shortage of power are the main hurdles in its march towards a self-generating economy. The fact that not even half the utilisable water resources has so far been utilised, also underlines the urgent need to evolve a coordinated water development and management policy.

This is why I have been laying so much emphasis on a National Water Grid. Although sages and poets have sung of the unity of Bharat through rivers, this has remained a distant dream. It is the privilege of this generation to give concrete shape to it. The National Water Grid envisages the transfer of surplus waters of some perennial rivers—now going waste into the sea or causing floods, devastation and human misery—to drought-prone and backward regions. Apart from meeting the basic needs of providing the rural population with drinking water and boosting agricultural production, the Grid will also serve as a navigation network, opening a cheap transportation channel for mineral, agricultural and forest products, thereby relieving the already congested railway and road systems.

1600-mile Canal

Although the Ganga-Cauvery canal is the biggest link, the Grid will include a link between the Ganga and Brahmaputra; a canal from the Narmada to Western Rajasthan; a canal from Chambal to Central Rajasthan; and links from the rivers of the Western Ghats towards the east.

The Ganga-Cauvery link envisages the diversion of the surplus flow of the northern rivers of about 20 million acre feet to the deficit areas in the Gangetic basin itself and to West and South India by a combination of rivers and streams and lift and gravity canals over a distance of 1,600 miles involving lifts of water of over 1,650 feet. The length of the new canals will however be only about 600 miles under the project. This would be the longest man-made canal in the world and will carry extensive merchandise. For the first time, India will have waters flowing north to south in addition to the existing rivers flowing either east or west.

Although Indian engineers have rich and varied experience and enjoy a high reputation, I felt it necessary to have an impartial international opinion before embarking on field investigations on a project which may take more than 25 years to complete and cost well over Rs. 2,500 crores. The United Nations Development Programme responded to the Government's request to advise it on the engineering feasibility, socio-economic benefits and possible lines of studies and surveys to be conducted to implement the project in a phased manner. The UN team was truly international in character. Led by Mr. Joseph Barnea (Israel), Director of the Resources and Transport Division in UN Headquarters, the team included Mr. Jakov Bradanovic of Yugoslavia, Mr. Silas Brown, Mr. Sanford Strausberg and Mr. Robin Reynolds of the United States, and Dr. Rudolf Partl of the United Kingdom. Besides having discussions with the representatives of the Government of India, the UN

Dr. K.L. Rao is Minister for Irrigation and Power, Government of India.

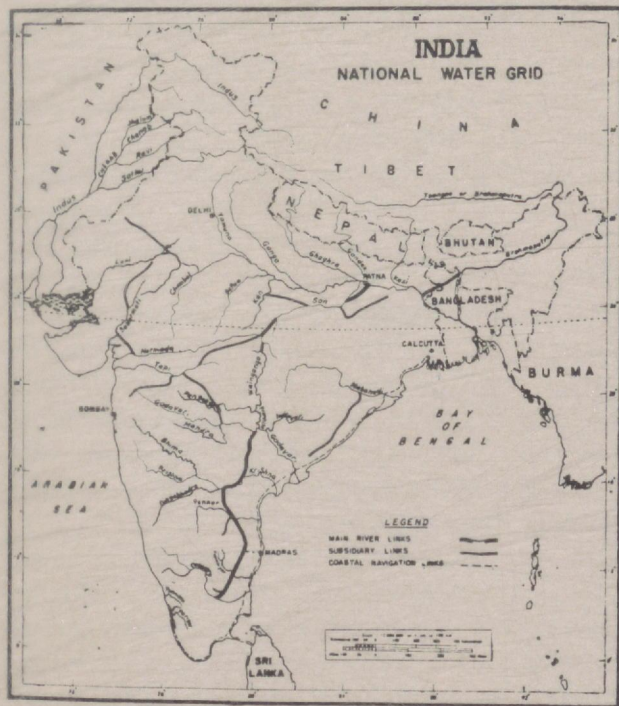
mission visited some of the peninsular regions through which the Grid is to pass.

What UN Thinks

The UN Mission has given a valuable and thought-provoking report. It has informed the Government of India that the Ganga-Cauvery link project "is technically feasible and would present no engineering and construction problems." The team, however, felt that thorough investigation of water yields and demands, of technical features, and of availability of low-cost power pumping is needed to determine its economic feasibility. Underlining the urgency of undertaking forthwith necessary follow-up steps, the team observed: "India's national economy in its development and growth will be confronted with the problem of increasing scarcity of water within the next 30 years. From basic compilation of future water demands and water yields, it becomes evident that by 2000 AD or so, the National Water Grid will be a vital necessity. No time should be lost in starting the very complex and difficult investigations, so

that plans will mature and be prepared in good time, and the facilities will have become operative by the time the need arises."

The Mission recommended that water should be declared a national asset and suggested a Central Water Authority, on which both the Centre and the States will be represented, for the planned development and utilisation of the country's water resources. Accordingly, necessary legislation and field studies are being initiated. I am glad to note that the UNDP-assisted India Country Programme has a provision of a million dollars for securing sophisticated equipment and consultancy services and fellowships to Indian engineers. Even the preliminary study would generate additional employment opportunities, but when the project is taken up, it will provide substantial employment to all categories of personnel. Similar projects are under way or being undertaken in USA and the Soviet Union and we can profit mutually from our experiences. During the recent UN seminar on "Current Issues of Water Resources Administration" held in New Delhi experts of many countries applauded India's bold planning and engineering skill in water development.



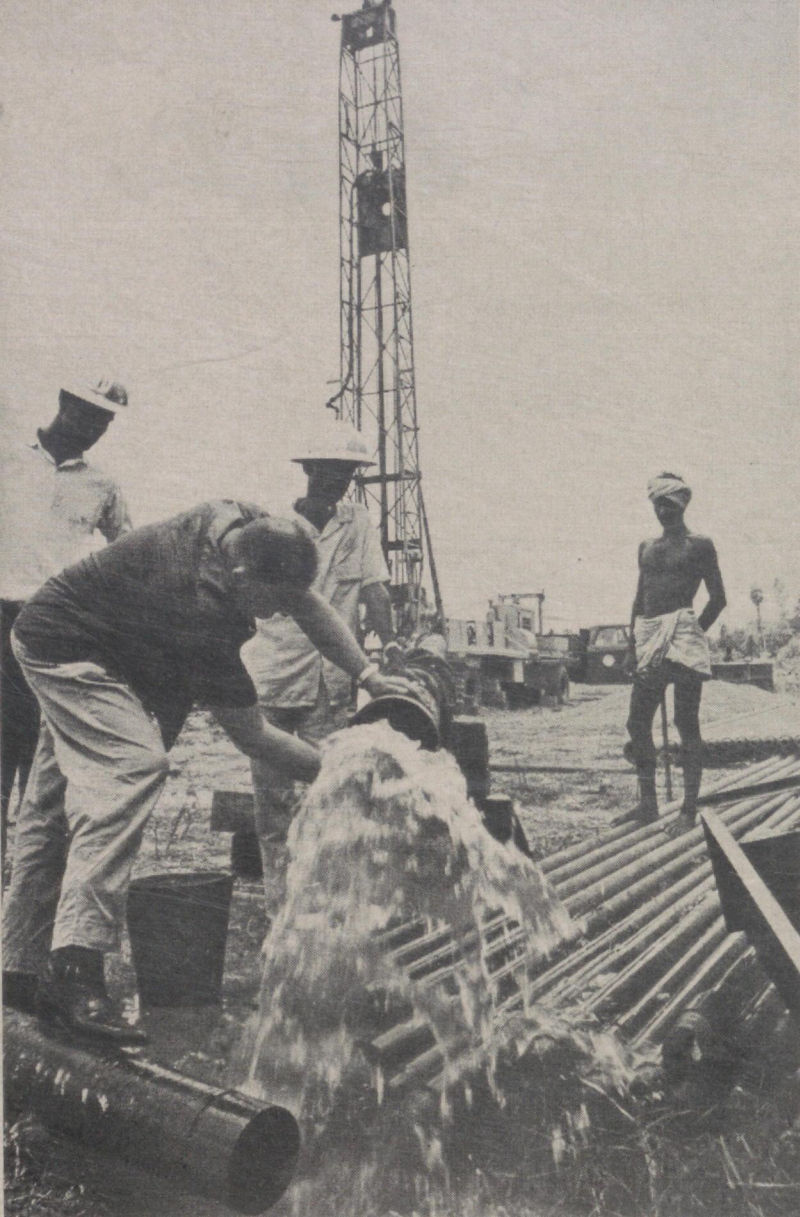
National Water Grid

Photo : Survey of India

Hydro-electric Power

UNDP is also providing valuable technical assistance in the development of a national power grid. Fortunately, India's hydro-electric power resources, estimated at 41 million kilowatts at 60 per cent load factor, are evenly spread over the country. A number of hydro-power schemes were taken up during the five year plans. The installed capacity of hydro-plants will be about 7.5 million K.W. by the end of the Fourth Plan in June 1974. The potential seasonal generation of energy from projects located in the Himalayan region is also considerable.

To provide tools and expertise for a proper investigation of projects and determination of their technical and economical feasibility, UNDP gave India \$ 2.35 million. Under the programme, a Central Soil and Materials Research Station has been set up to carry out basic research and tests. Equipment was also obtained to strengthen the Survey of India, the Central Water and Power Research Station at Poona and the Central Soil and



Groundwater

Photo: UN

Materials Research Station in New Delhi. Courses were conducted at Rana Pratap Sagar and Ukai dam sites to build up an adequate team of trained personnel. Out of 62 projects taken up, economic feasibility has been established in respect of 40 schemes. In fact, a project each in Assam, Maharashtra, Mysore, Tamil Nadu and Uttar Pradesh, has been sanctioned.

Cavitation Research

With the commissioning of the Cavitation Research Centre in 1968 as part of the Central Water and Research Power Station at Poona, with the

financial and technical assistance from UNDP, a new vista in hydro-electric research has opened. The multi-test water tunnel facility at the centre has made it possible for engineers to experiment with models of hydraulic machines, equipment and structures in India and thus save substantial foreign exchange which would have otherwise been spent on testing equipment abroad. The research centre will enable Indian engineers to develop safe, economic and cavitation-free water turbines and pumps and other equipment for hydro-electric and irrigation projects.

Coastal Engineering

Another facility of far-reaching importance in the same campus is the coastal engineering research unit with nearly a million dollars of assistance from UNDP. The coastline of India is beset with two baffling problems—accretion due to heavy littoral drift on the east coast and erosion on the west coast. Coastal erosion is most acute in Kerala. Research into these problems and those relating to the construction of harbours for accommodating vessels up to 200,000 DWT has become urgent. Other problems dealt with at the centre relate to reclamation and drainage of deltaic areas, prevention of salinity intrusion, disposal of industrial wastes and discharge of cooling water from fossil and nuclear power plants.

A hydraulic instrumentation centre has also been established in the same complex. With funds provided by UNDP, computerised equipment has been installed for measurement of hydraulic and general civil engineering parameters for laboratory and field use. Besides saving precious foreign exchange by having the tests in India itself, the centre will facilitate evolution of cheaper and better designs of hydraulic structures and river valley and coastal projects, inland navigation and pollution control.

It is a matter of gratification to India that the Central Water and Power Research Station at Poona has been designated as a regional laboratory by ECAFE. Thus the benefits of assistance which India received from UNDP are being shared with its neighbours in Asia.

New Tools for Agriculture

By Dr. M. S. Swaminathan, FRS

Agriculture is the backbone of the Indian economy. For the majority of the Indian population, this key sector is and will continue to be the major source of employment and livelihood. In the circumstances, the highly automated and mechanised farm technology being developed in richer nations of the West where manpower shortage is acute, is obviously not relevant to the agricultural needs and socio-economic realities of the poor nations. Countries like India will have to develop improved agricultural techniques which can help maximise the efficiency of the use of land, water, animal and people. The technology will have to be tailored to the needs of a specific agro-ecological and socio-economic milieu. Thus agricultural technology becomes highly location and situation specific.

Positive Trends

Recent advances in improving the yield potential of the major food and fibre crops have aroused a great deal of interest among illiterate and poor Indian farmers in the new technology. The so called tensions arising from the "green revolution" are in part an indication of the desire of the poorer sections of the farming community also to derive economic benefits from the recent scientific advances. Seen in this light, the tensions represent positive forces which ought to be canalised for achieving agrarian advance and rural prosperity.

An integrated and successful agricultural system can be developed only on the basis of an integrated domestication of soil, water, plants and animals. Short-term and long-term goals have to be harmonised. Ensuring a continuous rise in economic yield per unit without detriment to the long-term productivity of the soil, is hence the major aim of modern agricultural research. The dimension of time can be added to this objective in the tropics and sub-tropics where cropping is possible throughout the year. We also know now that we should strive for pest management on the basis of an integrated approach involving genetic, biological, agronomical and chemical methods of control and not just pest eradication alone. Finally, a nutritional dimension should be added to crop improvement objectives in view of the widespread malnutrition in developing countries. This is particularly important in countries like India with a high population pressure and low purchasing power in the case of the majority of people.

The wide spectrum of projects in agricultural research, development and extension supported by United Nations Development Programme, provides ample proof of its awareness of the need to canalise all tools of modern science towards the solution of the problem of hunger and to bridge the gap between what is accomplished in the research farm and in the farmer's field. Thus the projects chosen for UNDP support in India include: (a) nuclear

research in agriculture and livestock development; (b) development of high yielding-cum-high quality sorghum, millet, chick pea and pigeon pea at the International Crops Research Institute for Semi-arid Tropics (ICRISAT) at Hyderabad; (c) soil survey in the Rajasthan canal area; (d) land and water use and management in the Chambal irrigated area; (e) farm and community grain storage; (f) sheep development in eight states; (g) survey of forest products and training in forest industries; (h) advanced agricultural education ; and (i) farmers training and functional literacy programme.

Within the space available, I shall illustrate briefly with three examples the vital significance of these programmes in the conquest of hunger and in improving agrarian prosperity. First, we have established with UNDP/IAEA assistance nuclear research facilities for agricultural and livestock



Shearing Wool

Photo : FAO

development at the Indian Agricultural Research Institute (IARI) at Pusa, the Bhabha Atomic Research Centre (BARC) at Bombay, the Indian Veterinary Research Institute (IVRI) at Izatnagar, and the National Dairy Research Institute (NDRI) at Karnal. The nuclear research laboratory at Pusa which the Prime Minister inaugurated in November, 1971 as an integral part of the project, is the biggest of its kind in this part of the world.

Sheep-saving Vaccine

A radiation attenuated vaccine developed under the project at IVRI has proved a veritable boon to the sheep suffering from the lungworm disease. Its significance can be grasped from the fact that India has an estimated sheep population of 42 million and most of them live in hilly regions where they become more susceptible to the disease than in the plains. The results of pilot field experiments in the endemic areas of Kashmir were highly satisfactory. The vaccinated sheep not only showed marked resistance to the disease but also put on more weight and yielded rich wool. A small unit for manufacturing this vaccine has been set up in Srinagar. As this programme expands its activities to other hilly regions, the earlier UNDP/FAO-assisted project of sheep development in eight states is taking care of systematic grading and marketing of wool.

High-yielding Mutants

An urgent nutritional problem needing remedial action in India is the provision of more calories in the diet of poor people. The Task Force on Nutrition of the National Committee on Science and Technology has recommended that the per capita average consumption of fats should be increased to at least 30 to 40 grams per day from the present level of 10 per day.

It is in the light of such a need that UNDP-supported research on the production of high yielding mutants of groundnut and other oilseeds at BARC and IARI assumes significance. One of the groundnut mutants developed at BARC has already been approved for release by the Government of India. Another important contribution to oilseed



Prime Minister sees Nuclear Research

Photo : IARI

improvement is the provision of facilities to determine oil content in single grains of oilseed crops through the nuclear magnetic resonance (NMR) technique. Such non-destructive and rapid screening techniques accelerate the progress of plant breeding.

The decision of UNDP to provide during the next six years over \$ 3.7 million to the International Crop Research Institute for the Semi-arid Tropics (ICRISAT) located at Hyderabad, is a significant step in promoting research in the improvement of

the yield and quality of some of the major food crops. Sorghum, for instance, is an important crop in India, although it is used as animal feed in the west. Following the development of hybrid sorghums, productivity which had remained stagnant for a very long time, started an upward trend in countries like the United States.

In India, the first commercial hybrid, CSH-1 released in 1964, gave over 5,000 kilograms per hectare in coordinated trials conducted in various parts of the country. What is more, it withstood



Canal in the Desert

Photo : WFP

the rigours of drought and moisture stress. Since then four more hybrids and one high yielding variety have been released under the auspices of the All-India Sorghum Improvement Programme. Still the yield remains one-third or one-fourth of what it is in richer countries. A priority area of research is, therefore, the identification of the

factors restricting the spread or inhibiting the realisation of the high yield potential of the hybrids and varieties in each ecological and maturity zone. When these constraints are removed, our farmers may benefit from the scientific work already done. This is where the farmers' training and functional literacy programme can play a significant role.

WFP is helping India in the world's largest dairy project.

A White Revolution

By Dr. V. Kurien

Milk cooperatives have sprung up in many parts of rural India, ushering in a new awakening among millions of farmers. They are part of what is obviously the largest dairy development programme in the world. India launched this Rs. 153-crore five-year project two and a half years ago in collaboration with World Food Programme (WFP) to modernise its dairy industry, develop high-yielding milch cattle and improve the milk supply in the four major cities of Bombay, Delhi, Calcutta and Madras.

\$ 56 million WFP Aid

Known as Operation Flood, the project envisages the construction of four major milk plants, 17 new feeder centres and 173 chilling centres to increase the daily milk supply from 1 million to 2.75 million litres in the four cities. WFP is supporting the project with nearly \$ 56 million in the form of dried skim milk and butter oil. UNICEF is supplying such items as milk handling and processing equipment and UNDP is contributing \$ 1 million for the services of eight FAO experts to assist the Indian Dairy Corporation (IDC) and the National Dairy Development Board (NDDB) in executing the project on behalf of the Government of India. When it is completed in 1975, a reasonably good supply of milk will be assured to more than 20 million people in the four cities. What is more, the income of the farmers and milk producers in many rural areas is expected to be doubled, and additional employment will have been generated.

In a project of such immense magnitude some delays and upsets seem inevitable. The initial problems in packing and shipping have been nearly overcome and the quality of the donated commodities is such that they can be recombined with local fresh milk to provide an acceptable liquid milk. IDC, specially set up by the Government of India to implement the project, has organized itself to handle the substantial quantities of food aid being received, disburse funds and monitor the progress. NDDB which provides the expertise, has also geared itself to extend such services as design and turnkey erection of dairy and cattle feed plants. It has spear-headed teams to help milk producers to organise their own cooperatives. The project is steadily gaining tempo.

Results Achieved

Since the start of Operation Flood, progress may be summed up thus :

- ... By the end of 1973, the total capacity of the four major dairies would have risen from 1 million to 2.75 million litres daily; and their modern milk marketing capacities would have expanded from 1.35 million to 2.75 million litres by the time the project concludes in 1975.
- ... Rural dairy capacities are being expanded substantially to meet the increasing demand for milk. The dairies of Kaira and Mehsana districts in Gujarat have expanded already

Dr. V. Kurien is Chairman of Indian Dairy Corporation.



A Milk Cooperative

Photo : WFP/FAO

by 450,000 litres. New rural feeder/balancing plants are under erection at Banaskantha and Sabarkantha districts, each with a capacity of 150,000 litres of milk per day. As a result about 300,000 litres will be on stream by the end of 1973. Similar progress is taking place in Punjab, Haryana, Rajasthan and Uttar Pradesh to feed the Delhi plant.

... Eight cattle-feed plants would have been established by 1975, and with nutritious, scientifically balanced feed produced here milk yields are expected to rise substantially.

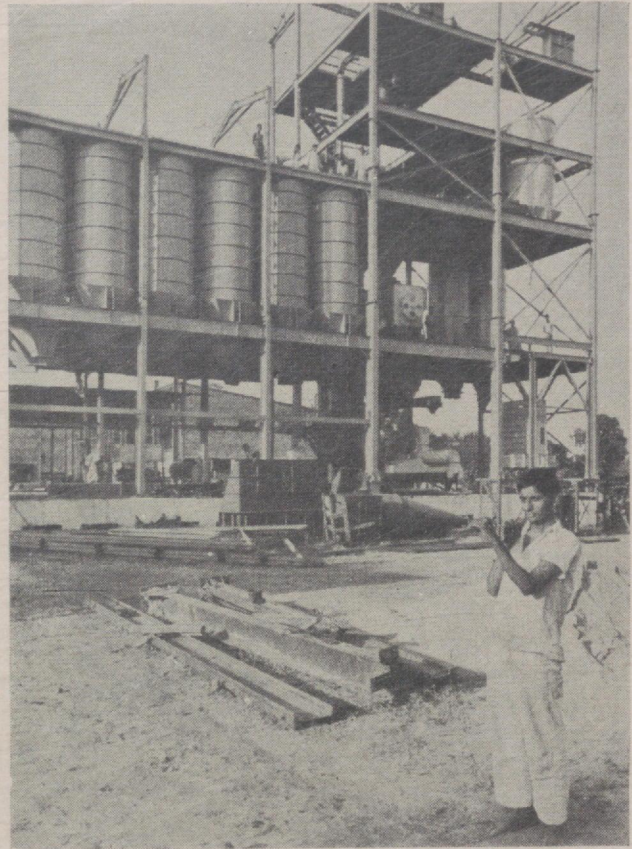
... About 350 pure-bred Jersey and Friesian cows and bulls have been imported under the project and supplied to cattle-breeding centres in states participating in the project. This will enable milk producers to rear almost 2 million high-yielding milch animals.

... Eighteen milk producer organisations will build up a network of milk cooperatives in 10 states including Maharashtra, Gujarat, Rajasthan and Haryana to feed "mother dairies" with 1.8 million litres daily which will fill the gap as WFP commodities are phased out.

- ... Experience has shown in the last two years that but for WFP commodities, shortage of milk supplies would have been more acute than ever as the poor monsoon and the resulting drought had reduced the supply of fresh milk considerably.
- ... In course of time, the proposed bulk retailing centres will keep milk refrigerated right up to the time the consumer purchases it and thus eliminate the inherent defects of supplying milk in bottles or plastic containers.

The importance of the project is highlighted by the fact that milk and milk products are the only source of animal protein to the majority of the Indian population. That is why the Government of India has invested huge sums in public sector undertakings in the dairy industry, animal husbandry and fodder development in the current Five-Year Plan. An additional sum of \$ 125 million, being generated by the sale of WFP commodities to dairies, constitutes a substantial contribution to the Government's goal of rehabilitating the agricultural economy and supplying milk to the urban population at moderate prices.

For the first time, milk cooperatives have given farmers a new strength. They depend no more on the middle man to market milk and milk products. Some 2 million people in rural India will find jobs under Operation Flood alone. Through milk cooperatives other social objectives such as family planning, hygiene, sanitation and healthy environment will gain



Balanced Feed for more Milk

Photo : FAO

ground. Operation Flood is not merely a dairy development project. It is a movement for enabling farmers to enjoy a better and fuller life.

New Challenges

Population

The need for balanced population growth to retain the benefits of expanding development activities is being increasingly recognised throughout the developing world. In the last 20 years, India and other developing countries have taken certain measures to check population growth, but experience has shown that the problem calls for an integrated, multidisciplinary approach at both national and international levels.

It is for assisting nations to tackle the population problem in all its ramifications that the United Nations Fund for Population Activities (UNFPA) was constituted. The Executive Director is Mr. Rafael Salas of the Philippines. The rapid rise in the resources of the Fund, which is being administered by the UNDP Administrator, is an eloquent testimony to the willingness of the international



community to supplement national efforts to tackle an obviously complex, long-range problem. Some 50 governments have contributed over \$ 103.2 million for assistance to 500 population projects in 74 countries including India. Since its inception, UNFPA has extended assistance to India to the tune of approximately \$ 2.3 million and further programmes of assistance are being developed.

The UN General Assembly has designated 1974 as World Population Year (WPY) during which all governments, whatever their demographic objectives, will develop information and education on population and family life matters and intensify family planning delivery systems.

The World Population Conference to be held in Bucharest, Romania, in August 1974—the first inter-governmental conference ever to be held on the subject—will be the most prominent landmark of the WPY.

Environment

For the first time, United Nations convened an international conference on human environment at Stockholm from 5 June to 16 June 1972. The Prime Minister of India, Mrs. Indira Gandhi, was among world's dignitaries who addressed the plenary session. Emphasising that life is one and the world is one, Mrs. Gandhi called for an integrated approach. Environment, she said, cannot be improved in conditions of poverty nor can poverty be removed without science and technology.

A plan of action drawn up at the conference covers control of pollution in ground, sea and air, earth watch, human settlements, noise control, preservation of genetic resources, water management, forest preservation and warning systems to prevent natural disasters.

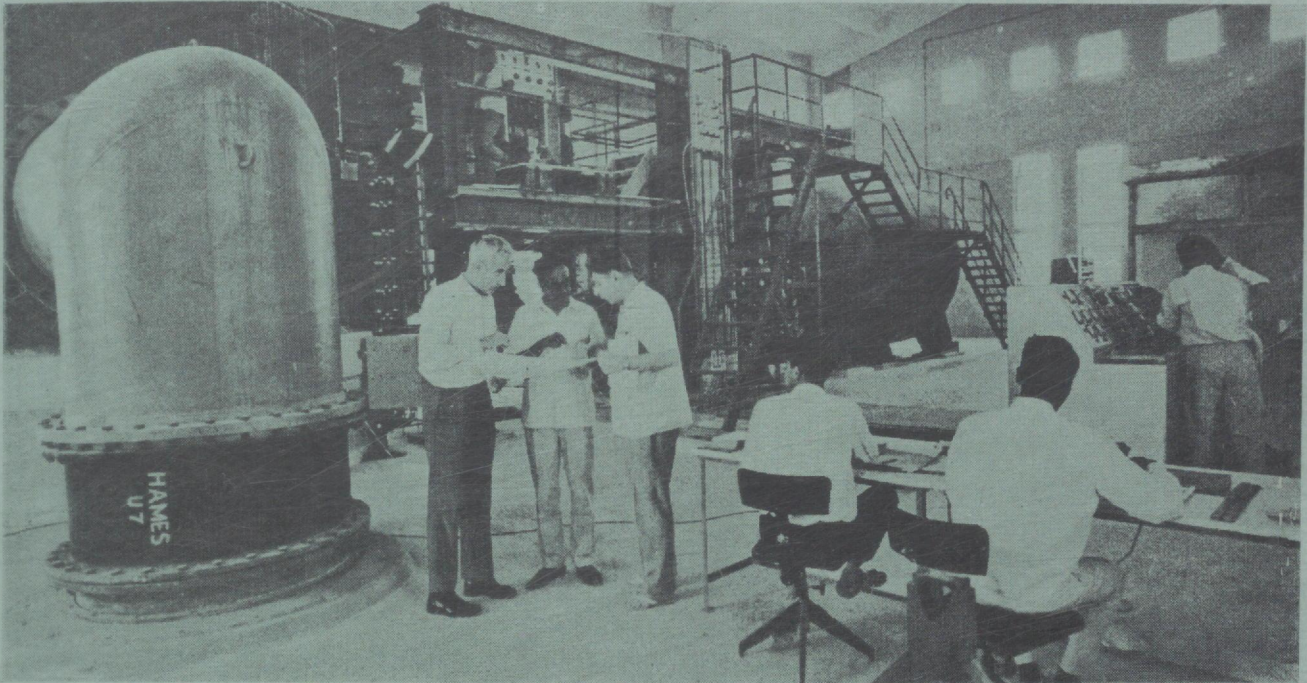


Nairobi in Kenya has been chosen as the headquarters of this UN agency with Mr. Maurice Strong of Canada as the first Secretary-General. 5 June every year is being observed as Environment Day to remind peoples and governments of the need to keep the planet we live in healthy and safe for future generations.

According to the UN Secretary-General, Mr. Kurt Waldheim, environmental protection is a field where ideology is irrelevant and all class and national interests converge.

Long before the conference, India was giving attention to pollution control in a limited manner through the Central Health Engineering Research Institute at Nagpur which has received UNDP/WHO assistance. The Planning Commission has set up a cell to work out plans for the improvement of environment.

New Technologies



A computer was pressed into service to ensure the structural strength of the three-storey laboratory housing the multi-test cavitation tunnel (above) of the UNDP-assisted Cavitation Research Centre at Poona : one of the many uses to which computers are put in an increasingly complex technological economy.

Photo : UN

The Computer as A Catalyst

The Government of India has plans to use computers as a catalyst to quicken the tempo of economic and social development in different regions. There exist already some medium and small size computers, but they are not adequate to meet the growing demand for computer facilities. UNDP has, therefore, been requested to assist in the establishment of three big computer complexes on a regional basis at an estimated UNDP input of \$ 8.1 million. These will be located at Tata Institute of Fundamental Research (TIFR) at Bombay, Jawaharlal Nehru University (JNU) at New Delhi and the National Aeronautical Laboratory (NAL) at Bangalore.

A two-member UN Mission which examined

the request on the spot, has come to the conclusion that India needs assistance in the expansion of computer-based activities in support of the economic development of the country. It has, however, suggested that, in the first instance, a large complex be established at the TIFR as its plans have a clear pre-investment character. The Mission has further recommended the establishment of a centre for the development of software and computer techniques in TIFR which will be utilised later by other computer centres. For preparatory work at New Delhi and Bangalore, the Mission has proposed some assistance by UNDP to Jawaharlal Nehru University and National Aeronautical Laboratory.

A 152-foot vessel is assisting India's fishery programme.

Surveys of Fisheries

By S. Olsen

Mechanised ocean fishing has developed spectacularly in India in the last two decades. Twentyfive years ago, Indian fishermen used canoes, catamarans and other sailing craft. Today the country has a fleet of more than 11,000 mechanised boats and trawlers and has become one of the world's largest exporters of frozen and canned shrimp.

The United Nations Development Programme as well as the Food and Agriculture Organization of the United Nations and some bilateral agencies, notably Norwegian, have in various ways contributed to this development. These agencies have assisted in the exploration of near-shore fishery resources, in establishing training facilities for the crew needed to man mechanised vessels and in designing and trying out suitable types of vessel which could be locally constructed.

Trained Personnel

The private sector fishing industry and co-operatives and government institutions very soon found themselves in great need of trained hands to meet the demand arising from the rapid development of fisheries. FAO cooperated in the establishment of a Central Institute of Fisheries Education in Bombay in 1960 with the financial support of UNDP. This training centre is today well established and can pride itself on the fact that all those who have completed their studies at it are fully employed, making a significant contribution to fisheries research and extension work, notably in the inland fresh water sector.

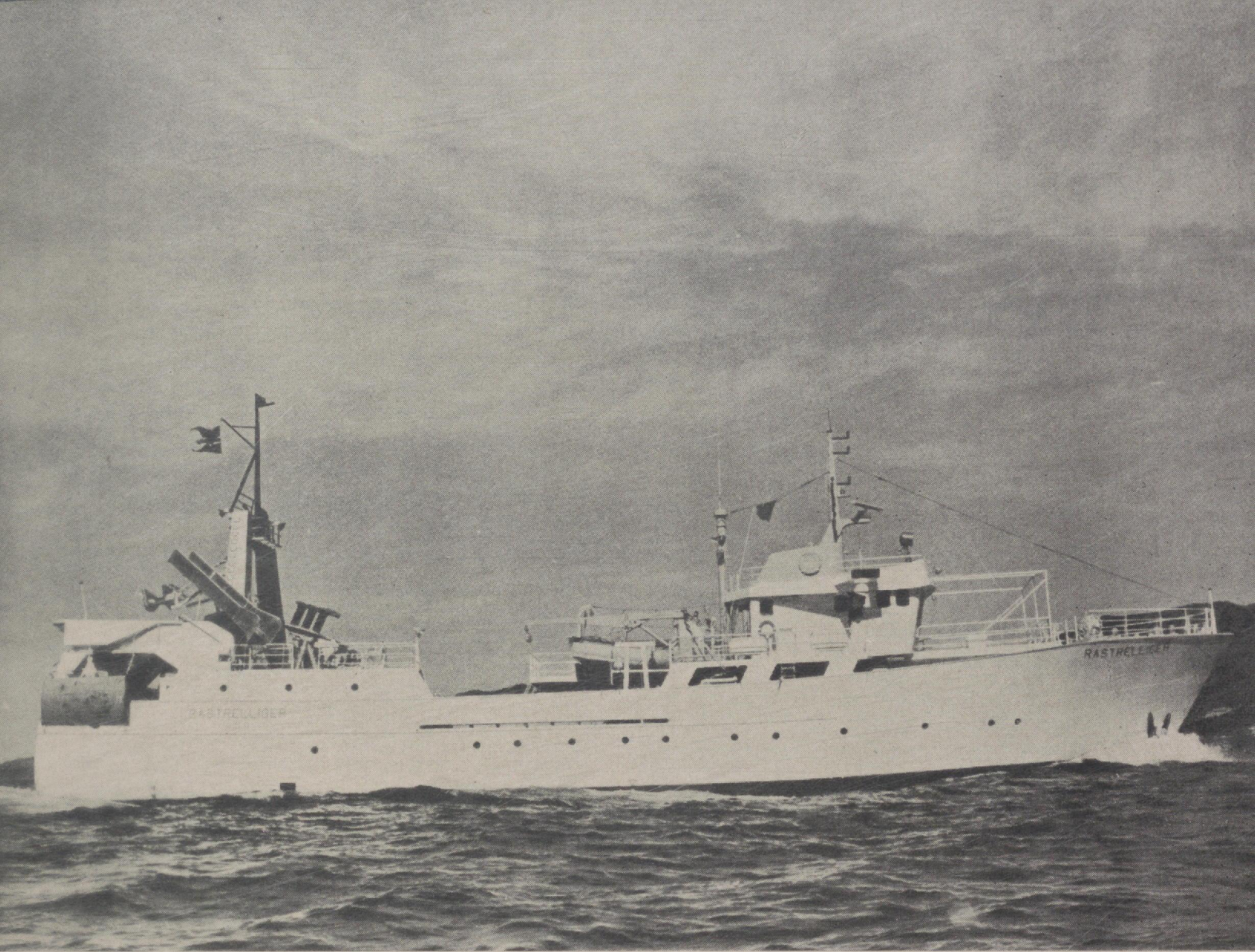
No development comparable to the booming shrimp export industry has, however, taken place in the other fisheries sectors in India. For instance,

sardines and mackerels are usually found in inshore waters. In the absence of scientific data about their breeding and other habits and due to lack of mechanised equipment, it was very difficult for the Government of India and the fishery industry to plan for the rational exploitation of the rich potential this source could provide. In 1968, the Government therefore requested assistance from UNDP to develop pelagic fisheries on the south-west coast in the first instance through a resources survey project. An agreement was signed between the Government of India and UNDP with FAO as the executing agency. This set-up entered into an agreement with the Norwegian Agency for International Development (NORAD) to provide equipment and experts. The project became operational in February 1971.

Big Research Vessel

The Pelagic Fishery Project has carried out surveys of the coastal waters all along the south-west coast of India from Ratnagiri to Kanyakumari, the southern tip of the land. In the beginning, this work was done with a small research vessel, the 54-foot long *Sardinella*, but since the beginning of 1973, the project has also had at its disposal the 152-foot research and exploratory fishing vessel, *Rastrelliger*, a stern trawler with purse seining facilities. Both vessels are equipped with sophisticated equipment for detecting shoals of fish under-sea. Routine surveys are carried out with acoustic methods to locate and map the distribution and abundance of fish in a given area, while fishing with trawl or purse seine is done to identify and sample the fish concentrations which are thus located.

Mr. S. Olsen is Project Manager of Pelagic Fishery Investigation in South-West Coast.



152-foot Fishery Vessel

Photo : FAO

The project has also successfully carried out an aerial survey to map the distribution and abundance of fish schools. It appears that aircraft observations combined with relevant vessel data can provide a quick and fairly reliable assessment of the sardine and mackerel resources just after the south-west monsoon when they are concentrated in surface waters.

At an early stage in the history of the project, it was shown that large schools of mackerel and sardine were available only a few miles off the coast at a time there was no fish inshore, where traditional fisheries were carried out. Subsequent observations have confirmed these findings and it

has been concluded that the fishing season for oil sardine and mackerel could be significantly advanced by exploiting offshore concentrations in August, September and October. Surface schools are frequently found in these months within 20 to 30 miles of the coast and they could be netted commercially with relatively small purse seiners of 40 to 60 feet. Fishing operations might even be extended in the same way for a short period in April-May just before the monsoon when inshore fishing normally halts.

Since relatively small vessels may be used to exploit these schools, the development of purse seine pelagic fishery will not have to await the



Bombay's Fish Supplies

Photo : FAO

construction of new, large fishing harbours.

In Shallow Waters

Another significant project finding is the detection of a dispersed source in shallow waters all along the coast of small pelagic fish such as silverbellies, ribbon fish, anchovies and white bait. This source, practically unfished at present, could sustain a fishery of at least 100,000 tons annually. Fish is readily available throughout the year only a few miles offshore and may be caught with relatively small vessels with mid-water trawl.

The Pelagic Fishery Project is fortunate in being closely located to and associated with the Integrated Fisheries Project (IFP). They share the workshop, wharfage, fuelling, shore and other facilities required for the project vessel. Even more important, the Government is able to start immediate follow-up activities to test and utilise on a pilot scale the survey findings of the pelagic project. Thus IFP is already carrying out commercial purse seine trawls, midwater trawling with small vessels and various product diversification and acceptability tests based on the resources already located.

The potential fishery resources on the east coast of India are less known than on the west coast and UNDP has accordingly agreed to a large-scale fishery survey and development project on this coast which will include both demersal and pelagic resources.

In general, the Indian Ocean's present fish yield per unit area is only between one fifth and one seventh of the comparable figures for the Pacific and Atlantic oceans respectively. Exploitation of the fish resources in the region is essential as millions suffer from deficiency in animal protein. Under the auspices of the Indian Ocean Fisheries Commission, UNDP is contributing to the organisation and operation of the International Indian Ocean Fishery Survey and Development Programme. This regional programme, which includes India, is trying to increase knowledge of the ocean as a whole, particularly of those stocks which offer opportunities for early economic development. It aims at identifying obstacles to fisheries development and is planning remedial action. It attempts to coordinate the existing fisheries projects in the area where feasible so as to make them more effective and useful.

India has a nation-wide TB Control Programme with UNDP/WHO assistance.

No Truce with TB

At first the objective seemed unrealistic : to develop a way of treating tuberculosis in a country with inadequate medical facilities, a shortage of hospital beds and a severely limited budget. Yet, after years of research and work in the field, a technique was hammered out, based on the use of modern drugs.

There are probably about 2 million actively contagious cases of TB in India at this moment. They are men and women in the most active years of life and their loss to the economy is serious. What is more, they live with pain and are menaced by

death. Studies show that 50 per cent of them will be dead in five years. Yet 90 per cent could be cured with modern drugs in about a year.

Until recently, the traditional technique was to send TB patients to sanatoria where they could have lots of bed rest, eat enriched diets, breathe clean air and be well looked-after. Such a programme was obviously impossible for developing countries like India, where the total health budget per person is only a dollar or two a year; these countries have no vast sanatoria but rather crowded hospitals, and cannot spare limited health personnel to give specialised care to TB patients.



Prevention of TB

Photo : WHO

Home Treatment

In the early 1950s new drugs appeared such as isoniazid to treat TB. Their success was so remarkable that the experimenters in India wondered if they could not be made the basis of treatment. Could a patient taking drugs every day go about his normal life, eat his usual food, go on living with his family, and still recover from TB ?

Established in 1956 under the joint auspices of the Indian Council of Medical Research, the Tamil Nadu Government, the World Health Organization and the British Medical Research Council, the Madras Tuberculosis Chemotherapy Centre (MCC) conducted trials to see if chemotherapy could be effective in the home treatment of pulmonary tuberculosis.

In the last 10 years, about 2,300 patients have been admitted to the centre for a year's treatment and a follow-up of at least five years; in addition their contacts have been followed up for at least one year.

The first study was a comparison between

patients at home and in a sanatorium. The home patients attended the centre once weekly to collect drugs. They were visited by a health visitor at least twice a month. Most of them lived in overcrowded homes and had poor diets. In contrast, patients in the sanatorium had good accommodation, bed-rest, a well-balanced diet and nursing care, including regular administration of drugs.

Amazing Conclusion

The results showed that the home patients responded nearly as well as sanatorium patients. In other words, patients living in poor conditions and with an often grossly insufficient diet did almost as well as those eating specially prepared meals in an institution.

But didn't those patients still circulating freely in society spread the disease? Again the results were encouraging. Those taking drugs on an ambulatory basis did not present a greater risk to others, even to their immediate family. The greatest risk seems to occur in the months preceding the recognition of TB, before treatment begins.

An injection of streptomycin plus high-dosage isoniazid, administered twice a week, was found to be at least as good as a standard daily regimen of PAS (para-aminosalicylic acid) plus low-dosage isoniazid. Trials are now under way to see if treatment can be reduced still further, to once a week.

Simple Diagnosis

Important as chemotherapy is for dealing with infectious TB patients, it is only part of the total scheme to seek out and treat cases and, equally important, to prevent them from occurring. In 1961, a pioneering team at the National Tuberculosis Institute in Bangalore, including a young Dane who was to become Director-General of the World Health Organization, Dr. Halfdan Mahler, began outlining a strategy for a mass approach to TB that could work in a country like India.

A simple sputum test is reliable, is cheap to perform, and does not require complicated equipment or highly trained staff. A fluorescent microscopy technique has been developed in Madras, because

it is simpler and faster than earlier methods, and bacilli can be detected at much lower magnification.

Striking at the Roots

The means to prevent TB throughout India already exist. BCG (Bacillus Calmett-Guerin) vaccination, the most rational TB control method available today, can cut down incidence by 80 per cent. Children hold the highest priority. Vaccination is usually given at pre-school age or during the school period, and for best results, should be done before the child has become infected. A single potent vaccination protects for more than 10 years.

WHO has assisted the overall campaign to fight TB in India since it was begun, in 1951, aided by funds from UNDP. Step by step, WHO has trained national counterparts to continue specialized TB work though WHO continues to provide expertise for short terms. With the help from UNDP, drugs and equipment not available in India but indispensable for research can be purchased. The MCC does first-rate scientific work that has helped to change fundamentally the concept of drug treatment for TB. Both developing and technically advanced countries benefit.

Vaccine Output

In addition to promoting the work of the Madras Tuberculosis Chemotherapy Centre and the National Tuberculosis Institute in Bangalore, WHO has helped to develop BCG vaccine production in India. In 1972, this reached a height of 15 million doses of freeze-dried vaccine, the most effective under tropical conditions. The target for 1973 is 30 million doses. UNICEF also assists with vehicles, BCG kits, extra equipment, drugs and supplies.

Today India has a nation-wide TB programme such as few other developing countries have. Apart from TB control, WHO is collaborating with India in various other health programmes. Between 1949 and 1972, WHO spent \$ 24.65 million on them. Many Indians are serving as WHO experts in different parts of the world.

A nutrition programme of UNICEF which is changing rural life.

Health And Self-help

Niwari village in Tikamgarh district of Madhya Pradesh, along with 24 other villages in the development block, became a part of the UNICEF-assisted Applied Nutrition Programme in 1970. This programme provides direct and indirect support to self-sustaining village efforts for the production and consumption of nutritious foods.

The programme has taken hold in Niwari. Now the white walls of the gram panchayat are decorated with coloured charts depicting all the vegetables, fruits and protein foods which go towards a healthy diet. There is a village school garden, a community garden, a poultry unit, a fisheries tank, a youth club (*yuvak mandal*), a women's centre (*mahila mandal*) and a pre-school centre (*balwadi*). As recently as five or ten years ago many of the villagers would not eat fish, eggs or green vegetables; now these items are recognised by nearly all of them as important foods.

Changing Trend

In recent years change has come to Niwari, as it has to all of rural India. In the life time of the village leaders the population has almost doubled, rising to about 1,200 people. Fifty per cent of the villagers' houses are now *pukka* concrete buildings — twenty years ago everyone lived in mud huts. In those days there were only two educated persons in Niwari — now literacy stands at 65 per cent. The "drop-out" rate at the local school is decreasing, and the number of children going on to higher education continues to increase.

The use of fertilisers and new methods of irrigation, which have replaced the clay buckets of the old persian wheel, have multiplied agricultural pro-

duction some ten to fifteen times. There is even a tractor in the village nowadays. Formerly, many young couples with children used to migrate from Niwari to the cities, but now most of them stay in the village. The cost of living in the towns is higher and employment is hard to find.



Nutrition for Children

Photo : UNICEF

The Applied Nutrition Programme is one of the Government's efforts to improve the quality of rural life. (UNICEF supplies certain critical inputs, but the programme is very much a Government programme, and it is the Government's rural extension workers who are responsible for bringing it to villages throughout all parts of India). In Niwari the programme has taken the form of a community garden, where the green leaves used in making *pan* (a major local product), as well as guava, papaya, pomegranate and other fruits and vegetables are grown. A proportion of the produce is given to the village children. The remainder is sold, the profit being used to buy fertilisers and seeds.

The establishment of the village school garden has not been quite so easy. The four thousand rupees set aside for the digging of a well was not sufficient to meet costs when a hard-rock layer was encountered during the digging. Now the well is finished and the pumphouse and the irrigation channels are prepared, but the pump has not yet arrived. When it does, the garden will be maintained by the school children themselves.

Yuvak Mandal

In the *balwadi* twenty five children under five enjoy games, songs and other group activities and are provided with a midday meal. The ladies of the *mahila-mandal* are occupied with sewing, embroidery, and cooking—the last under the guidance of a lady Nutrition Extension Officer. The *yuvak mandal*—boys and young men from 15 to 30 years old—receives a grant to cultivate Niwari's community garden.

The *yuvak mandal* also participates in the transportation of concrete poles to the village, for use as street lamps under the rural electrification scheme, and in the fisheries and poultry components of applied nutrition. Both fisheries and poultry are flourishing in Niwari. The village fisheries tank has produced substantial quantities of fish since the Department of Fisheries put in 7,500 fingerlings in 1970. However, weeds have to be removed before the nets can be cast again, and the village is waiting for Government sanction for a subsidy for the purpose. The village poultry

unit is run by a young man who contracted polio in infancy and lost the use of his legs. Nevertheless, he became a university graduate in biology and now looks after 50 birds with great success. Twenty eggs are distributed daily to the children of the *balwadi*.

The Applied Nutrition Programme is just one of many UNICEF-assisted efforts to bring a better life and a brighter future to India's millions of children. In recent years UNICEF has supported a major dairy programme to establish modern dairy facilities in all of India's major cities. UNICEF, along with WHO, has played a major role in equipping India's 5,000 primary health centres and their associated sub-centres, the core of the expansion of rural health services. Together with UNESCO, UNICEF assisted India's science education programme, which has prepared a completely new school science curriculum designed to give children a basic understanding of their physical environment and encourage their curiosity about it, as well as to improve the quality of teaching generally.

Water Supply

And in the past year UNICEF's safe water supply drilling programme has assumed an even more important role. UNICEF has assisted the import of hard-rock drilling rigs ever since the Bihar drought of 1967, and the programme, which was expanded to cover all of the nation's hard-rock areas in 1969, has been an outstanding success, bringing a pure, protected supply of drinking water to thousands of villages. In March 1973, the Government of India formally requested UNICEF aid in importing twenty-five hard-rock rigs on an emergency basis in response to severe drought conditions in five western and southern states. UNICEF responded quickly. Less than four months later the last of the new rigs was being fitted on to trucks in Bombay; the rest were already in service in all of the drought-stricken areas.

A jet of precious water shooting skywards to mark a new well for a dry village somewhere in western India, the songs and games of the *balwadi* children in Niwari village—these are the small pieces which go together to make up UNICEF's work for children in India.

UNDP assistance has enlarged the area of research in India.

Filling Gaps in Technology

By Dr. Y. Nayudamma

With its goal of attaining a self-generating economy as early as possible, India has been pressing science and technology into service in its multifarious developmental activities. It was Jawaharlal Nehru, India's first Prime Minister, who consciously sought to bring about a scientific approach to solving the complex problems. The present Prime Minister's decision to create a Ministry of Science and Technology has added a new dimension to that policy.

India has produced a galaxy of scientists. The emphasis has all along been to mobilise indigenous talent and national resources and to utilise external assistance in the form of equipment and expertise to the limited extent necessary to fill the gaps in this important sector. The organisation necessary for generating, transferring and utilising the knowledge and experience thus gained was built up over years through the Council of Scientific and Industrial Research (CSIR), which has today 44 establishments under its umbrella. The wide range of CSIR's research activities cover all aspects of engineering, metals, coal, petroleum, glass and ceramics, food, leather technology, drugs, instrumentation, geophysics and oceanography. The CSIR has identified priority areas for specific research and development inputs by national laboratories to ensure purposeful development programmes tied to national needs.

Positive Role

In building up advanced technology competence and in promoting scientific research in India, UNDP has played a positive role. In the early

years, when assistance was given projectwise, the Indian Institute of Petroleum received a little over a million dollars in the form of equipment, experts and fellowships to strengthen organised research in petroleum refining and petrochemical production and utilisation. For the singular purpose of serving medium and small industries, the Mechanical Engineering Research and Development Organization (MERADO) has been established with headquarters at Durgapur and branches at Ludhiana, Madras and Poona. The Central Scientific Instruments Organization (CSIO) has also received valuable assistance from UNDP to establish design and development facilities for instrumentation. The facility for testing "creep" in steel established with UNDP help at the National Metallurgical Laboratory (NML) at Jamshedpur has meant a considerable saving in foreign exchange for India. Environmental problems are being tackled to a limited extent at the Central Public Health Engineering Institute at Nagpur which was among the earlier projects to receive UNDP/WHO assistance.

With the accent on science and technology, the UNDP-assisted India Country Programme has earmarked \$ 4.7 million in 1972-76 for the projects of the CSIR. The major thrust in the funding programme is to catalyse the pace of research, to supplement infrastructure facilities, to provide the necessary experts and equipment, and to establish desirable links between Indian and foreign experts through seminars, deputations and fellowships to Indian trainees.

Dr. Y. Nayudamma is Director-General of CSIR and Secretary, Government of India.

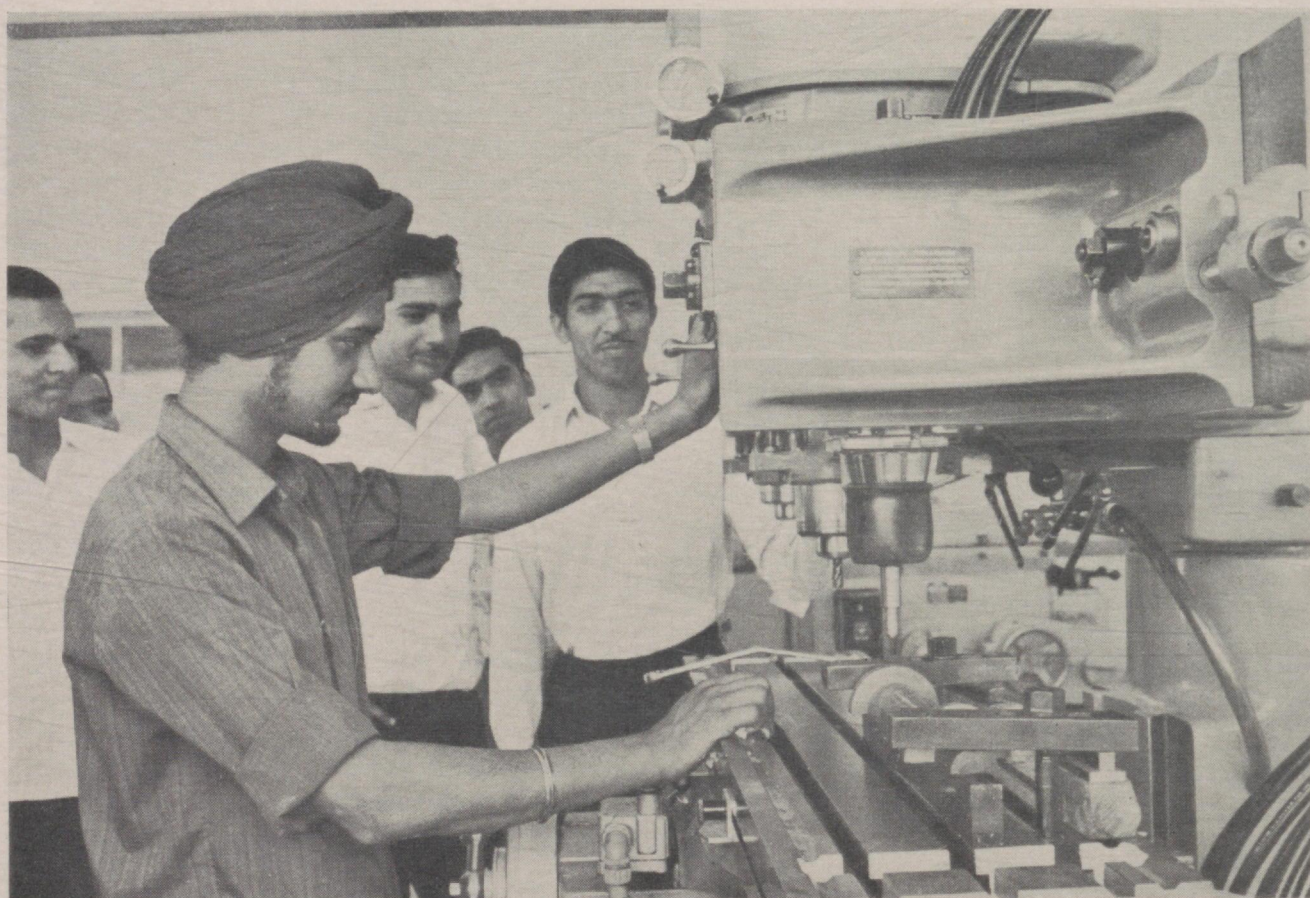
In view of the Government's nationwide television development programme, UNDP assistance has been sought to enlarge the research and development activities on semi-conductor devices at the Central Electronics Engineering Research Institute at Pilani. New transistors are being designed and developed at the Institute. Experimental studies for educational TV will also be expanded. At the employment-oriented Central Leather Research Institute (CLRI) in Madras, which has received assistance from UNDP for training workers for the leather goods industry, it is proposed to establish a centre for the utilisation of byproducts of slaughter houses.

In the earlier years, the National Aeronautical Laboratory (NAL) at Bangalore received assistance

to establish a wind tunnel centre to test aircraft models from aerodynamic and structural standpoints. The NAL has sought UNDP assistance to set up a turbo-machinery and combustion laboratory to train competent technical personnel. The National Metallurgical Laboratory at Jamshedpur has also requested a million dollars of aid over five years to expand ore-dressing and testing facilities in view of the growing demand for Indian ores abroad and the need to extract metals to meet local demand.

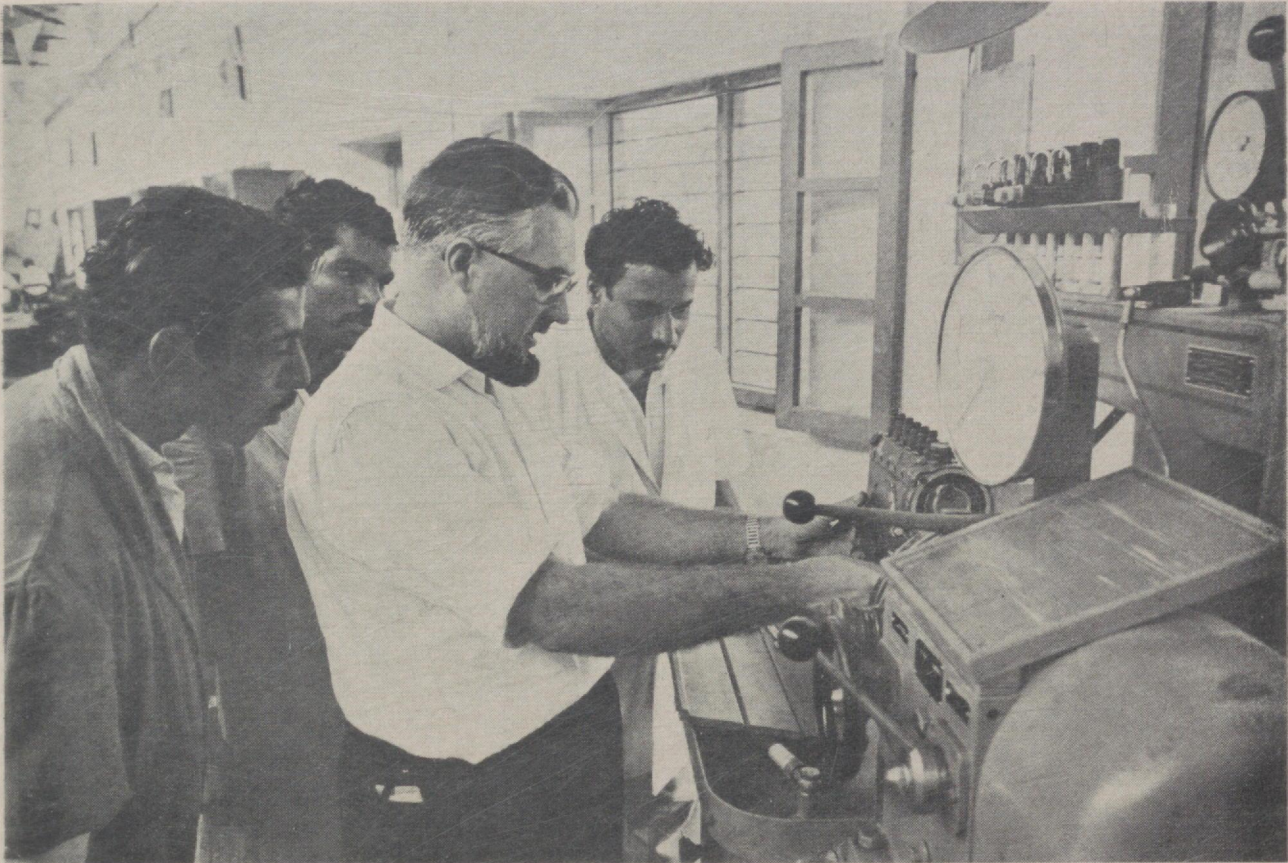
Close Links Forged

The close links thus established between CSIR and UNDP have proved valuable and mutually advantageous. India is both at the receiving and



Foundry and Forge Training

Photo : UN



Training in Trades

Photo : ILO

giving ends, as an acceptor and donor of scientific expertise and technology. The UN agencies have been utilising the research institutions of CSIR for the benefit of other developing countries. Thus the Central Public Health Research Engineering Institute functions as a regional centre for WHO and the Central Leather Research Institute as a regional centre for UNIDO. Some of the establishments of CSIR send experts to developing countries on request from UN specialised agencies such as FAO, UNIDO, WHO and ILO. A considerable part of the assistance from India has been channelled through UNDP.

The three-day seminar on transfer of technology

held in New Delhi in December 1972 with the cooperation of UNIDO was useful to both developed and developing countries. The discussion covered not only transfer of appropriate technology from the developed to developing countries and between developing countries but also transfer of results from the laboratory to industry or farm. Through a mode of understanding signed then, the Government of India and the UNIDO have decided to maintain a continuous dialogue to enhance the value of the UNDP/UNIDO assisted Indian programmes as well as to enlarge the area of cooperation between India and other developing countries.

Training for Toolmakers in Industry

By A. D. Granger

Two young enterprising engineers, Ravindra Reddy and Satyanarayana Reddy, are manufacturing at their small machine shop in Hyderabad, sophisticated production tools required by large scale-industry. They have successfully completed sub-assemblies for a "Fuel Machine Carriage" for the atomic reactor in Rajasthan. This required many critical operations and the close tolerances specified by the Atomic Energy Commission. Within a period of three years, the invested outlay of the Reddys was trebled.

The Reddys were helped in their venture by the common servicing facilities that are offered by the Central Institute of Tool Design (CITD), established by the Government of India at Balanagar in Hyderabad with the assistance of the United Nations Development Programme (UNDP) and the International Labour Organization (ILO). CITD not only assisted the Reddys in the design and manufacture of jigs and fixtures but also guided them in the successful operation of the highly sophisticated tool making machines under the guidance of ILO experts attached to the Institute.

Timely Assistance

A pioneering nylon zip manufacturer in Howrah and an electronic engineer of Andhra, G.S. Murthy, also owe their success to the timely assistance received from CITD. In the case of the zip-maker, CITD came to his rescue by undertaking to make highly sophisticated gear wheels when all attempts by the firm to obtain replacements for its worn out complicated Japanese machinery had

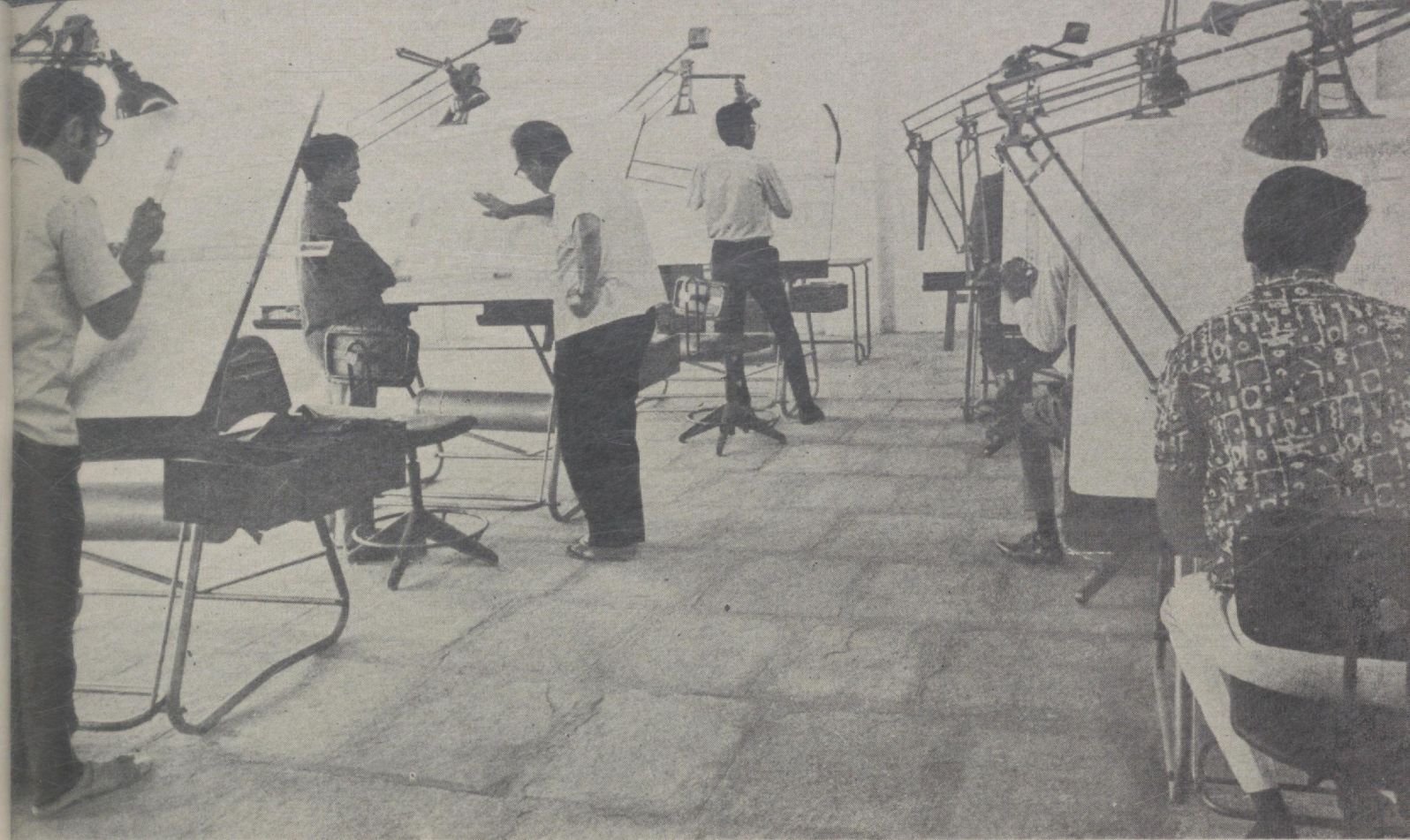
failed. In the second case, dies and moulds designed and manufactured by the CITD helped Murthy establish himself as a reputed manufacturer of electronic components. He plans to expand his unit further.

These are some of the notable examples of how the Institute is coping with the growing demand for trained technical personnel and consultancy services of the small-scale industry. This will result in the expansion of its activities and thus contribute to the generation of additional employment opportunities. While large-scale industries have their place in India's economic development, provision for training facilities for tool designers and tool-makers of limited financial resources in different parts of the country is considered as absolutely essential by the Government to combat skilled and semi-skilled unemployment and to correct regional economic disparities.

The Institute is located on a nine-acre site in the heart of the industrial belt of Hyderabad. While the Government made a substantial contribution in the form of permanent buildings, counterpart staff and local services, UNDP's share was nearly a million dollars in the form of experts, modern equipment and fellowship grants to Indian trainees.

The aims and objectives of the Institute are:-

- (i) Training of technical personnel to assist small-scale industries in the design and manufacture of tools, dies and moulds.
- (ii) Provision of advisory, consultancy and common service facilities to small-scale industries including assistance in the design



Tool Designing

Photo : ILO

and development of tools for various processes.

- (iii) Production on a limited basis of tools, jigs and fixtures, gauges, dies and moulds.
- (iv) Recommending measures to standardise components for tools, jigs, fixtures, dies and moulds.

Popular Courses

Since training personnel is the primary objective of the Institute, it offers a two-year regular course for engineering graduates in tool, die and mould design, and another three-year course for technicians in tool, die and mouldmaking. The training programmes are becoming increasingly popular and the Institute is finding it hard to cope with the overwhelming demand. It has therefore become necessary to extend enrolment from 48 trainees per course to 72.

The experience so far gained in the functioning of the Institute, which is, in essence a pilot scheme,

points to a rapidly increasing need to expand its facilities to serve small-scale industries all over the country. In the Fifth Plan period, the Institute, apart from continuing to cater to the trained manpower requirements of tool designers and tool-makers, has plans to set up two other regional institutes—one at Calcutta in the eastern region and the other at Ludhiana in the northern region.

Besides approving these expansion proposals of the Institute, the Planning Group of the National Council of Science and Technology has recommended to the Planning Commission that two more regional institutes—one at Poona for the western region and the other at Madras for the southern region—should also be established. The mother Institute at Hyderabad will also assume a regional character soon because India has decided to extend the training facilities in postgraduate toolmaking and tool designing courses in 1974 to a limited number of eligible candidates from the countries of South and South-East Asia.

A Job with a Challenge

By Alex Quarmyne

Passing by Mandi House near India Gate in New Delhi, one perhaps does not notice any external change; inside—it's all change! The princely building, once the Delhi residence of the Maharaja of Mandi, is now the hub of training in television production and technical operations.

The Government of India has taken a bold decision to expand India's television service into a nation-wide network and use the medium for in-school as well as mass education with emphasis on modern farm techniques, health, family planning and other economic and social objectives. To achieve this, India is also involved in a satellite instructional television experiment at Ahmedabad and in a vastly expanded use of educational technology. In both these projects which will revolutionise mass communication, India is assisted by the United Nations Development Programme (UNDP).

The collaboration between the Government of India and UNDP with UNESCO as the executing agency in respect of the television training programme is for three years at the end of which it will be a continuing responsibility of the Government.

Four Objectives

The project was undertaken with four main objectives. It was to establish in Poona a modern television training centre with studios, central rooms, offices, classrooms, specialised work rooms, and all equipment and staff required for training. It was to develop short courses specially designed for the production staff who will have the responsibility of designing and producing educational and

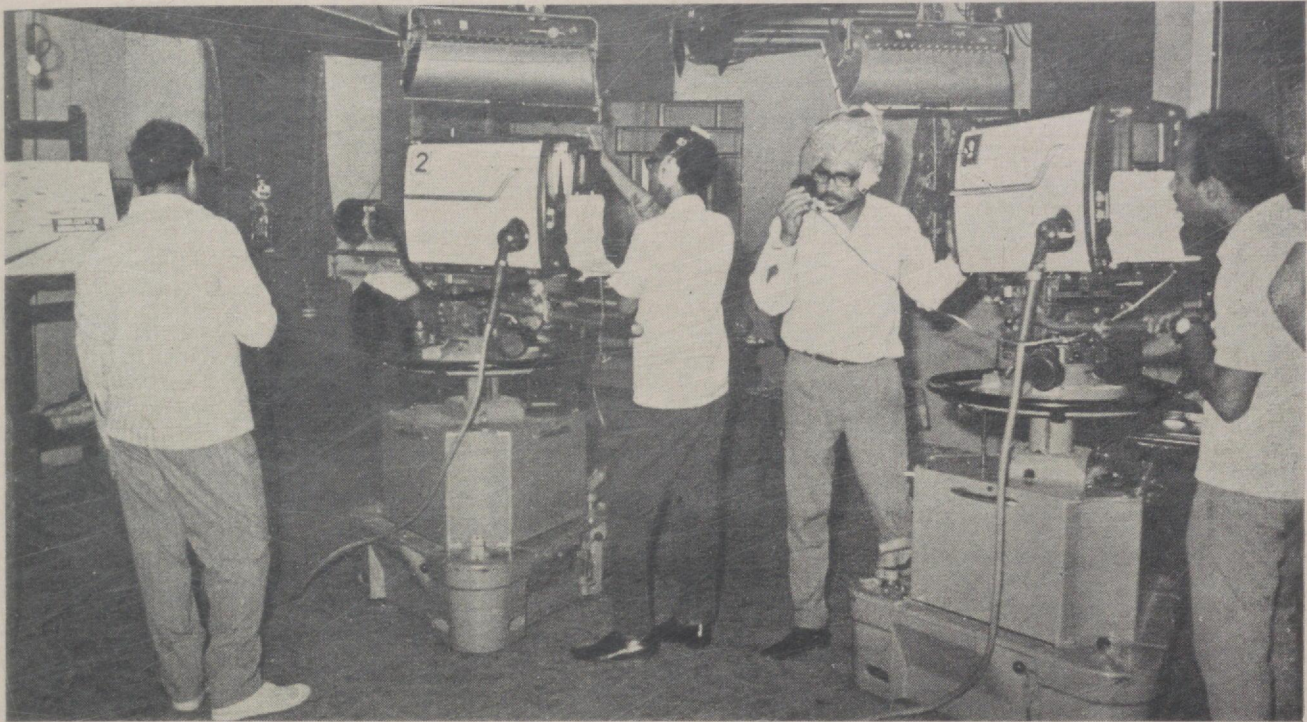
development support television programmes. It was to initiate new courses in television studio technical operations and television film. It was also to design and offer conversion courses for the staff already trained in various aspects of radio or cinema work and adapt them to analogous aspects of television work.

The project was declared operational in August 1971 in Mandi House temporarily until the new building complex is ready at Poona as its permanent headquarters. This procedure became necessary as the basic staff required for the new television stations already opened in Bombay and Srinagar has had to be trained on an emergency basis. The princely bedrooms in Mandi House were turned into class rooms, halls into technical areas, attendants' apartments into scenery construction workshops and the banquet hall into a television studio. Adequate equipment was flown in by UNDP to make possible the start of the first courses in television programme production and television studio technical operations. Four pairs of courses have already been completed and a total of 256 trained personnel have so far been assigned to TV stations in Delhi, Bombay, Srinagar and Amritsar. Specialised courses will be taken up when the centre moves to Poona.

Equipment and Experts

Currently working on the project are six television experts recruited from Australia, Britain, Canada and Ghana. The experts' areas of specialisation include television programme production, educational television, televi-

Mr. A. Quarmyne is Chief Technical Adviser in TV Training project.



Television Training

Photo : T.V. Centre

sion film production, television technical operations and television scenery design. An expert in television programme research is expected to join the project shortly. Appropriately some of the Indian counterparts are already in position to take over full responsibility when foreign experts leave India. Moreover, the overseas study fellowships provided by UNDP will enable a certain number of local counterpart staff to study at major television organisations around the world and to specialise in a variety of areas of television work.

Concurrently with the training operations in Mandi House, newly designed buildings are nearing completion at a cost of Rs. 44.5 lakhs to house the permanent television training centre at Poona. By the time the centre goes into operation in early 1974, UNDP will have provided modern equipment worth US \$ 700,000 (Rs. 52.50 lakhs).

Both the international and national staff on the project view the future of television in India with great excitement and promise. When completed, the terrestrial television network will form the largest single television system in the developing

world. The Satellite Instructional Television Experiment (SITE) at Ahmedabad, which is being conducted in cooperation with the International Telecommunication Union (ITU) and UNESCO, is to become operational in early 1975 when ATS/F satellite of the United States is placed in position towards India. The experiment will, for the first time, make possible the direct reception of satellite-relayed television programmes by relatively inexpensive community receivers. The satellite experiment will be carried out in 5,000 villages in five selected areas in different parts of the country. Ultimately, over a period of years, 150,000 villages are proposed to be covered by the television network.

The success of the technical operations and the programme effectiveness of India's terrestrial and satellite television systems, and the extent to which India's television service meets the challenge of providing support for the country's development objectives, will, to large a extent, depend on the present graduates emerging from Mandi House and on the future output of the permanent training centre at Poona.



Kovalam Beach

Photo : ITDC

India is an all-year round tourist attraction with Gulmarg in the North and Kovalam in the South.

Tourism in India

By Otto Santner

Ever since I first visited Kashmir in December 1934 and did some skiing in Gulmarg, I have been convinced that India could become a tourists' paradise. In winter, you have the sun-bathed sand beaches, including those of Kovalam, Mahabalipuram

and Goa where you can swim in unpolluted seas outside the big cities; in spring and autumn, you can holiday in any of the hill resorts over 2,000 metres high which are just as pleasant as any summer resort in Europe.

Mr. Otto Santner is UN expert on tourism.

But the number of tourists visiting India is not commensurate with its status as an all-year tourist attraction. The Indian Government is alive to its responsibilities to provide the tourist with the delights he needs by way of comfortable accommodation, good food and a relaxed atmosphere. In response to the Government's request, a team of UN experts led by Dr. O'Driscoll visited India and recommended ways and means of attracting more tourists. The team thought tourism earned more hard currency for India than iron and steel or leather or engineering goods. But with streamlining the administration and developing tourist resorts further, India could earn as much as Rs. 150 crores (\$ 200 million) by 1978. With this potential the Indian target of 15 per cent growth is modest.

Although there was a 7 per cent rise in the number of tourists going abroad from USA, the sharp decrease in air rates to Europe was perhaps responsible for many of them not visiting India. It is also cheaper for Australians to go to Europe and Britain though India is closer. The Indian tourist department is therefore fighting for favourable air fares to bring in more tourists. There was a 41 per cent increase in Japanese tourist traffic to India in 1972. The Japanese have been attracted by mountaineering, trekking and Buddhist shrines.

Gulmarg Well-equipped

Recognising India's tourist potentialities, UNDP has given assistance in expertise and equipment for the development of Gulmarg as a year round sports centre. Gulmarg, which is only 50 km from Srinagar airport, is already attracting many sports enthusiasts. The winter of 1972-73 brought 27,000 guest nights, while 40,000 and 60,000 are expected in 1973-74 and 1974-75 respectively. The ski centre is equipped with one chairlift, two T-bars, two portable T-bars and an excellent three-star hotel. By the winter of 1974, a four-star hotel would have been completed.

As a result of the proposed tripartite partnership between India, UNDP and Austria, one more skilift upto 3100 metres and a second skilift upto 4000 metres may be ready by 1975. The Gulmarg plateau is excellent for Langlauf too, because it is



Skiing in Gulmarg

Photo : ITDC

avalanche-proof. Ski equipment for hire at Gulmarg includes 280 pairs of Kheissl and Kaestle skis, short skis and cross-country skis. Imported from top firms are skipools, gloves, boots, goggles, parkas, stretch-trousers and skiboats and sledges. To clear the road up to Gulmarg whenever necessary, a snow-beater and two unimogs have also been acquired. Under my supervision, 19 ski teachers have been trained. The golf course is an additional attraction in summer. Apart from the splendid natural setting, Gulmarg provides the unique opportunity for a tourist to have a panoramic view on a clear day of five of the 14 highest peaks in the world.

Drinking water is one of the worries of foreigners visiting India. On recent visits to Kulu Valley in Himachal Pradesh, I found mineral springs of high quality at Kalath. Mineral water can be tapped there at the rate of 430 litres a day. An analysis by the Fresenius Institute of Wiesbaden (West Germany) disclosed that Kalath mineral water is

outstanding judged by the West German mineral water standard regulations. A bottling plant is being set up. A balneological expert has also been provided by UNDP to help the Indian Government develop many hot springs in Kulu Valley and other parts of the country as spas.

Beach Resorts

Another team of experts sponsored by UNDP visited India recently to advise the Government on the development of Kovalam, Mahabalipuram, Goa and other beach resorts for attracting additional foreign destination tourists. Kovalam, with its easy air access via Trivandrum in Kerala, possesses a wonderful, clean coconut-plam fringed sandy beach of 10 km on one side and some cosy grove-like beaches on the other. For a European, it is a dream come true to swim in midwinter at 30 degrees centigrade in the pure blue waters of the Arabian Sea. For those interested in health cure, yoga and dances, Kovalam is the place. It is also famous for its lobster and prawn fishing and its luscious pineapples. India Tourism Development Corporation (ITDC) has put up 40 modern bungalows right on the beach. A 100-bed five-star hotel is expected to be completed by 1974.

India realises that tourism is such a sophisticated business that it calls for specialised training for personnel at all levels and in all ramifications. In response to a request from the Government, UNDP

secured the services of Prof. McIntosh, a tourist expert, to advise on the location and other details of the proposed tourist training and research institute. His report is under consideration. While the project as a whole is expected to cost \$ 5 million, with a \$ 2 million recurring cost, UNDP assistance will be in the form of providing equipment and experts.

I think India would do well to develop what is known in the West as social tourism. Nearly 66 per cent of American and European tourism is outside the four-star and five-star hotels. It is done through the development of inns, hostels, guest houses and mobile camps. The Asian Highway is of great importance for future social tourism from Europe to India. It is the cheapest access to India, the second to air in time, and with the double advantage of mobility with a car and more luggage for convenience. I have myself done the trip four times in a four-seater Caravan in between six and nine days. Each trip cost me less than \$ 100 for petrol, oil, servicing and road tolls.

Once tourism enthusiasts know the variety of attractions India offers—its temples and other monuments of architectural beauty, its hill stations, winter sports resorts, beaches and modern hotels and, above all, the proverbial hospitality of its people—the flow will become much more pronounced than it is at present.

How to Obtain UNDP Assistance

Requests for UNDP assistance should be addressed to the Ministry of Finance (Department of Economic Affairs), Government of India, on the prescribed proforma obtainable from the Department. Such requests, if approved and sponsored by the Government, are entertained by UNDP. Assistance will be extended subject to the requests fulfilling the criteria laid down by UNDP.

A Selected List of Currently Operational Large-Scale Projects Assisted by the United Nations System

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
A. AGRICULTURE & FOOD				
Nuclear Research in Agriculture	To assist in establishing a nuclear research laboratory at the Indian Agricultural Research Institute, New Delhi, and to extend research and training facilities for nuclear research in agriculture and livestock development at this Institute and at three other Centres—BARC, Bombay, IVRI, Izatnagar and NDRI, Karnal.	UNDP/IAEA	1,411,606	1968
Soil and Water Management	To demonstrate improved methods of land and water management in and around the Chambal area.	UNDP/FAO	380,000	1972
Post-Graduate Agricultural Education and Research	To provide assistance in agricultural research and in developing training facilities in selected fields of agricultural science to support the nation's food production efforts.	UNDP/UNESCO in association with FAO	539,436	1971
Farmers' Training and Functional Literacy	To assist the Government in its high yielding varieties programme of agricultural production through Farmers' Training supported by Farm Radio Broadcasting and the Functional Literacy Programme.	UNDP/FAO in association with UNESCO	785,000	1969
Groundwater Surveys	To assist the Government in determining the technical and economic potential of groundwater in the semi-arid region of Mehsana and Banaskantha districts of Gujarat as well as in five areas in the region of Western Rajasthan.	UNDP/UN	664,900	1971
Operation Flood	To improve milk production, supply and marketing facilities in Delhi, Bombay, Madras and Calcutta. The scheme involves the "flooding" of these markets with a combination of fresh milk and recombined milk made from skim milk powder and butter oil supplied by World Food Programme over a period of five years during which time action will be taken to develop a country-based milk production industry.	WFP	55,960,000	1970

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
Milk Marketing and Dairy Development	To assist the Government in its aims to improve milk marketing and to speed up dairy development.	UNDP/FAO	1,152,000	1970
Balanced Feeding of Cattle	To assist selected milk schemes in the country in meeting present market requirements and to assist key Intensive Cattle Development Blocks in their effort to increase yield through balanced feeding.	WFP	11,308,800	1967
Subsidized Milk Scheme	To improve the general level of nutrition by helping to make available plentiful supplies of wholesome milk; to stimulate increased milk consumption by 'toning' milk to lower fat content thereby reducing its cost without impairing its nutritional effect; and to provide free or subsidized milk to vulnerable groups of children and to expectant and nursing mothers with low incomes.	UNICEF	12,213,400	1953
Pelagic Fishery Investigation on the South West Coast	To assist through a resource survey in the development of sardine and mackerel fisheries on the South West Coast and to conduct trials with new gear and other techniques.	UNDP/FAO	2,630,000	1971
Animal Production and Health	To assist in animal production and health, poultry production, dairy engineering and training of local personnel.	UNDP/FAO	2,227,144	1952
Poultry Production	To encourage all-India poultry development through provision of subsidized feed and improved marketing facilities.	WFP	7,025,360	1968
Forest Development	To attract the considerable number of unskilled labourers necessary for the exploitation and reforestation of 400,000 acres of depleted forest including the construction of about 300 miles of roads. WFP contribution is by way of food as part-payment of wages to the workers.	WFP	3,143,000	1971
Irrigation Wells Programme	To assist the Bihar Relief Committee in financing the construction of 3,500 surface percolation wells through part-payment of wages in wheat.	WFP	1,156,000	1971

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
Food Aid to Labour	Sale at concessional rates of WFP commodities to attract labour for the construction of the Rajasthan Canal, branch canals and related works.	WFP	4,190,000	1968
Roads and Land Development	To assist the Government of Mysore in the intensive development of 400,000 acres of land irrigated by Thungabhadra Dam project and the construction of 1760 km of rural roads in the districts of Bellary and Raichur.	WFP	2,611,000	1972
Soil Conservation	To assist the Government of Mysore in the implementation of a soil conservation programme in the districts of Chitradurga, Junakar, Kolar and Bangalore.	WFP	1,950,000	1972
Applied Nutrition	To promote in rural areas increased production and consumption of protective foods coupled with nutrition education.	UNICEF	15,046,000	1959
Processed Food Development	To expand the indigenous production, distribution and consumption of nutritious foods for children with a view to combating malnutrition among children and weanlings.	UNICEF	1,679,000	1960
B. SCIENTIFIC RESEARCH				
Mechanical Engineering Research and Development	To assist the Government in the establishment of a Mechanical Engineering Research and Development Organisation (MERADO) with headquarters at Durgapur and regional centres at Poona, Madras and Ludhiana. The MERADO is complementary to the Central Mechanical Engineering Research Institute, also located at Durgapur.	UNDP/UNESCO	651,098	1986
Creep Testing Facilities	To assist in the establishment of a central creep testing facility at the National Metallurgical Laboratory at Jamshedpur to provide testing facilities and to train personnel required for the development of local grades of heat resisting steel and super alloys to the level of international standards.	UNDP/UNIDO	630,428	1971

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
Satellite Communication	To help expand the facilities of the Experimental Satellite Communication Earth Station at Ahmedabad so that it may participate in experiments in mass education in such subjects as modern farm techniques, family planning and environment employing the medium of television broadcasting via satellite.	UNDP/ITU	1,069,820	1971
Sterilization of Medical Products	To assist in establishing a cobalt 60 irradiation facility for sterilizing medical products near the Bhabha Atomic Research Centre, Bombay.	UNDP/IAEA	644,000	1971
C. IRRIGATION & POWER				
Coastal Engineering Research	To assist the Government in strengthening the capability of the Central Water and Power Research Station, Poona, by providing more advanced equipment and training staff to apply it to programmes of coastal engineering and hydraulics instrumentation.	UNDP/UN	885,354	1972
D. TRANSPORT & COMMUNICATIONS				
Training in Television	To help develop training facilities for television production and studio technical operations personnel at Poona. The personnel already trained on an emergency basis in New Delhi are working in Delhi, Bombay, Srinagar and Amritsar.	UNDP/UNESCO	1,414,284	1971
E. INDUSTRY & MINERALS				
Mineral Surveys in Uttar Pradesh	To undertake economic feasibility studies of industrial rocks and minerals in the northern and southern districts of Uttar Pradesh, and to carry out detailed investigations along the copper-bearing Sonrai fault zone as well as broader-scale surveys on other geologically promising structures in the Jhansi-Sonrai area.	UNDP/UN	633,700	1972
Central Institute of Tool Design	To assist in establishing a Tool Room Centre at Hyderabad to train personnel in tool making and tool design for small scale industries.	UNDP/ILO	971,634	1969

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
Mineral Development in Tamil Nadu (Phase II)	Using modern exploration techniques to complete the inventory of non-ferrous, non-radioactive minerals in Northern Tamil Nadu. Also to undertake an economic viability study of huge iron ore deposits in the Tiruvannamalai area.	UNDP/UN	602,500	1972
Electrical Measuring Instruments	To assist in the establishment of a Design Centre for electrical measuring instruments to serve mainly small scale manufacturers of electrical instruments and to facilitate the organization of training programmes for technical personnel in this field.	UNDP/UNIDO	1,014,479	1969
F. LABOUR WELFARE & CRAFTSMEN TRAINING				
Advanced Vocational Training Institute	To assist in establishing an advanced Vocational Training Institute in Madras which will serve as a model for similar institutes to be organized later in the country's most important industrial cities.	UNDP/ILO	1,100,697	1968
G. EDUCATION				
Post-Graduate Education of Engineers	To help establish a national system of industry-oriented post-graduate courses for engineers and to further strengthen the undergraduate programmes at the Regional Engineering Colleges.	UNDP/UNESCO	2,097,414	1970
Feeding Programme in Mysore	To provide mid-day meals for 50,000 students in high schools and colleges and food assistance to 42,000 students and residents in hostels for backward communities and certified institutions in Mysore.	WFP	8,787,133	1972
Feeding Programme in Maharashtra	To provide food assistance for 53,000 students in hostels for backward communities and 12,000 inmates of certified schools and institutions for the physically handicapped in Maharashtra.	WFP	8,423,000	1972
Integrated Services for Children	To prepare a programme of integrated services for children and youth in urban areas, and to formulate city-level action plans based on systematic fact-finding and collaboration among agencies concerned at Central, State and local levels.	UNICEF	1,087,000	1969

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Commencement</i>
Family and Child Welfare	To develop additional social services for the family, linking them with services already offered in the rural areas by community development, applied nutrition, health and primary education programmes.	UNICEF	761,000	1967
Science Education	To expand and improve the teaching of science throughout the school system with a view to making science a basic and integral part of education.	UNICEF	10,014,000	1965
H. WATER SUPPLY & HEALTH SERVICES				
Health Services	To meet the health needs of millions of children in India's rural areas by reinforcing the nation's health infrastructure through the provision of supplies and equipment for more than half of India's 5,250 primary health centres and for over a third of its 33,000 sub-centres; expansion of the teaching and practice of social medicine; training of nurses, basic health workers, auxiliary nurse-midwives and dais.	UNICEF	43,308,000	1950
Expansion of Auxiliary Nurse - Midwives (ANM) Training in India	To improve the ANM/population ratio in Bihar by stepping up and improving the training of auxiliary nurse-midwives and supervisory personnel.	UNICEF/UNFPA/WHO	1,558,000	1972
Village Water Supply	To provide 12,000 villages in India's water scarcity hard rock areas with a supply of water for drinking, washing and growing vegetables in school/community gardens. The latest drilling equipment provided by UNICEF is helping to sink a large number of sufficiently deep wells in the rocky terrain in a fraction of the time taken earlier.	UNICEF	7,733,333	1969
National T. B. Programme	To assist in developing a national tuberculosis control programme by providing technical guidance based on model tuberculosis control programmes, epidemiological findings and operational research; to train sufficient public health workers of various categories for the tuberculosis control centres at district and State levels, and to develop methods and procedures for the assessment of the programme.	UNDP/WHO	1,092,661	1956

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Approximate allocation (in dollars)</i>	<i>Commencement</i>
T. B. Chemotherapy Centre, Madras	To assist in controlled trials to find simple, effective and inexpensive methods of tuberculosis control through domiciliary and ambulatory chemotherapy, and in carrying out related research.	UNDP/WHO	1,490,410	1955
Malaria Eradication	To assist the malaria eradication programme.	WHO	2,047,820	1958
Dental Education	Improvement of Dental Education	UNDP/WHO	132,361	1969
Smallpox Eradication	To assist in developing the smallpox eradication programme.	WHO	648,994	1969
Leprosy Control	To assist in developing a programme for leprosy control and in training staff.	WHO	472,590	1963
Strengthening of Health Services	To assist in establishing and improving health intelligence units in State health directorates and in training staff in epidemiology, health statistics, microbiology and communicable-disease control.	WHO	452,071	1964
Environment	To assist in developing the Central Health Engineering Research Institute at Nagpur as a major research and training centre for environment health problems and co-ordinating research programmes.	WHO	761,953	1961
Post-Basic Nursing Education	To assist in expanding post-basic nursing education, with initial emphasis on post-basic degree programmes usually offering professional specialization in teaching, administration, public health or one of the clinical specialities.	WHO	1,154,309	1964
Teaching of Population Problems in Nursing and Midwifery Education	To improve the maternal and child health and family planning components of auxiliary nurse-midwife training and to strengthen the domiciliary midwifery and public health nursing experience of nursing students in hospital schools of nursing; to strengthen the teaching of human reproduction, family planning and population dynamics at teaching institutions for nursing personnel.	UNFPA/WHO	92,532	1972

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Approximate allocation (in dollars)</i>	<i>Commencement</i>
Nursing Advisers to States	To organize and expand nursing education and nursing services and to coordinate supervisory services to ensure uniformly high standards of nursing and midwifery in health programmes.	UNDP/WHO	417,892	1957
Health Education in Schools	To assist in integrating family life education in schools, colleges and teacher-training curricula and in establishing and developing a health education programme in the educational system.	UNFPA/WHO	171,500	1971
Family Health Programmes	To assist in the planning, organization, operation and evaluation of the family health programmes as an integral part of the general health services.	UNFPA/WHO	125,600	1970
Medical Education	To assist medical colleges in improving teaching, service and research.	WHO	504,717	1958
Population Control	To strengthen the service, teaching and research functions of the departments involved in the teaching of human reproduction, family planning and population dynamics in medical colleges.	UNFPA/WHO	254,000	1970

A Selected List of Recently Completed Government Large-Scale Projects Assisted by the United Nations System

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Termination</i>
Pre-Investment Surveying, Mapping and Training	To assist the Survey of India in the establishment and initial operation of a pilot map production and training centre at Hyderabad.	UNDP/UN	2,261,300	1973
Groundwater Surveys in Rajasthan	To investigate and evaluate groundwater potential for agricultural and industrial uses in Western Rajasthan.	UNDP/UN	971,200	1971
Groundwater Investigations in Tamil Nadu	To investigate and evaluate groundwater resources and appraise the technical and economic feasibility of groundwater development in various regions of Tamil Nadu; Madras City environs, Palar River Basin, Neyveli area and to investigate the hydrogeology of the Cauvery Delta.	UNDP/UN	1,868,300	1969
Institute for Petroleum Exploration, Dehra Dun	To assist in the research programme and training of staff officers of the Oil and Natural Gas Commission.	UNDP/UN	1,010,900	1970
Mineral Development in Tamil Nadu	Exploration in an area of approximately 20,000 sq. kms. where deposits of ferrous and non-ferrous metals, vermiculite and phosphate are known to occur with a view to locating exploitable deposits and training counterpart personnel in modern techniques.	UNDP/UN	1,021,200	1971
Cavitation Research Centre	To provide a multi-test water tunnel for research on the effects of water flow (cavitation) on various types of hydraulic equipment.	UNDP/UN	500,833	1971
Survey of Water Supply Resources of Greater Calcutta	To provide advisory services to the Calcutta Metropolitan Authority and prepare a Master Plan designed to provide the Calcutta Metropolitan District with ample and safe water supply facilities and adequate sewerage and drainage.	UNDP/WHO	732,100	1967
Soil Survey and Soil and Water Management Research	To carry out reconnaissance and detailed surveys of soils in the Rajasthan canal area and to conduct experiments and demonstrations for optimum soil and water use and efficient plant protection.	UNDP/FAO	894,800	1971

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Termination</i>
Grassland and Fodder Development	To improve forage and fodder production, grazing, management and nutritional environment of livestock through the establishment of demonstration farms and assistance in research activities.	UNDP/FAO	391,500	1972
Farm and Community Grain Storage Development	To assist in implementing development research and training programme in bins to reduce the present losses and wastages in foodgrains and to help develop an appropriate extension programme.	UNDP/FAO	1,095,400	1973
Sheep and Wool Development	To help develop sheep husbandry through improved sheep breeding, shearing, collection, grading, marketing and utilization of wool.	UNDP/FAO	1,634,300	1973
Improvement of Milk Production	To assist in the long range goal of increasing milk production in the Calcutta area by cross breeding of indigenous and European dairy cattle and through improved husbandry practices.	UNDP/FAO	901,500	1973
Pre-Investment Survey of Fishing Harbours	To assist in conducting economic and technical studies to identify priority sites for the development of fishing harbours and to prepare construction plans for these harbours and supporting facilities.	UNDP/FAO	1,439,800	1972
Fisheries Training Institute, Bombay	To establish a Central Fisheries Training Institute in Bombay for training fisheries officials required at the State and district levels.	UNDP/FAO	610,300	1969
Pre-Investment Study of Forest Resources	To assist in surveying and developing forest resources and forest industries to increase wood production to supplement domestic needs especially in the fields of pulp and paper.	UNDP/FAO	885,100	1969
Establishment of Four Logging Training Centres	To train forestry personnel in certain aspects of logging.	UNDP/FAO	503,900	1969
Central Sheep and Wool Research Institute	To establish a central institute in Malpura, Rajasthan, to conduct research on all phases of sheep husbandry and management.	UNDP/FAO	744,000	1968
National Institute of Foundry and Forge Technology	To create specialised training facilities at Ranchi in foundry and forge technology for technicians, technical instructors, foremen and engineers.	UNDP/UNESCO	1,060,400	1972

<i>Title</i>	<i>Purpose</i>	<i>Source of Assistance</i>	<i>Allocation (in US Dollars)</i>	<i>Termination</i>
Training of Teachers for Engineering Colleges	To establish a training centre for regional engineering college teachers at the Regional Engineering College, Warangal.	UNDP/UNESCO	1,764,900	1969
Assistance to Six Regional Engineering Colleges	To implement, develop and improve the programme of instruction at the regional engineering colleges at Mangalore, Nagpur, Bhopal, Jamshedpur, Allahabad and Durgapur.	UNDP/UNESCO	2,241,054	1969
Central Scientific Instruments Organization	To establish a Central Scientific Instruments Organization in Chandigarh to design and develop scientific instruments and ensure quality control and standardization of the instrument industry.	UNDP/UNESCO	935,000	1969
Indian Institute of Petroleum	To strengthen the Institute's refining and petro-chemical division to provide training and research in petroleum refining and in petro-chemical production and utilization.	UNDP/UNESCO	1,124,100	1970
Central Institute of Plastics Engineering and Tools	To help establish and run a pilot institute in Madras for training and advisory services in the design and construction of moulds, dies and tools for the plastic processing and other industries.	UNDP/ILO	871,256	1973
National Apprenticeship Scheme	To assist in establishing central technical services and four regional apprenticeship headquarters in order to implement the expansion of the country's apprenticeship scheme.	UNDP/ILO	1,372,671	1972
Training in Industrial Engineering	To establish a national institute in Bombay to organize and develop comprehensive facilities for training in industrial engineering.	UNDP/ILO	669,000	1969
Centre for Research and Training on the Use of Satellite Communication	To assist in the establishment and initial operation of the Centre for satellite training in Ahmedabad to participate in tests and conduct training and investigation in satellite communication techniques.	UNDP/ITU	620,500	1969

**Lists of selected Large-Scale Projects included in the INDIA/UNDP
Country Programme (1972-79) but not yet implemented**

<i>Title of Project</i>	<i>Objective</i>	<i>Estimated UNDP Contribution (in US Dollars)</i>
A. AGRICULTURE AND FOOD		
Groundwater Surveys in Punjab State	Assess the groundwater potential of a selected area in Punjab State.	1,130,000
Exploratory Fishery Survey in East Coast	Using modern techniques, conduct systematic investigation of the fishery potentials of the East Coast.	2,400,000
Development Centre for Forest Products	Pilot plant trials to ascertain the economic viability of processes for industrial use of forest products.	1,500,000
International Food Technology Training Centre, Mysore	Assist in further developing the Regional Centre at Mysore to enable it serve the growing interests of the countries in Asia and Far East.	1,172,000
B. SCIENTIFIC RESEARCH		
Leather Goods Development	To establish a Leather Goods Development and Demonstration Centre at the Central Leather Research Institute, Madras, to act as a focus for reorientation and expansion of leather goods industry.	288,000
Demonstration Plant for Synthetic Fibres	To provide at the premises of the Silk and Art Silk Mills' Research Association at Bombay a demonstration unit for development of the use of nylon and polyester fibres in fabrics and to stimulate production of the staple fibres and filament of nylon and polyester fibres.	735,000
Industrial Application of Large Radiation Sources	Studies on utilization of radioisotopes for isotopic power sources and on the industrial applications of isotopes for preparation of labelled compounds, radio isotope gauges and other devices.	150,000
Development of Space Technology and Methods for Remote Sensing Programme	Training personnel in the use and operation of specialized instruments for remote sensing programme in agriculture, forestry, oceanography, geology, hydrology, geography and pollution.	639,000
Electrosmelting of Ilmenite concentrates	Design, construction, supply of equipment and experimental operation of the pilot demonstration plant and training of personnel.	500,000
Ore testing and ore dressing	Develop the existing facilities at the National Metallurgical Laboratory at Jamshedpur to meet the increasing demand from industry for ore testing and ore dressing.	1,000,000
Advanced Technology in Solid State Electronics	Assist the Central Electronics Engineering Research Institute, Pilani, in its research and development activities on semiconductor devices.	765,000
Centre for utilization of by-products of slaughter houses	Assist the Central Leather Research Institute, Madras, in setting up the proposed centre with a view to ensuring economic utilization of the principal slaughter house/animal by-products.	146,000
C. IRRIGATION AND POWER		
National Water Grid	Conduct feasibility studies on the diversion of surplus monsoon waters of the Ganga river going waste, to deficit areas as part of the establishment of National Water Grid.	1,000,000

<i>Title of Project</i>	<i>Objective</i>	<i>Estimated UNDP Contribution (in US Dollars)</i>
Establishment of National Institute of Hydrology	To conduct advance research in hydrology, prepare hydrological maps of the entire country ; formulate a national water budget for long-range and short-range water resources planning and its optimal development.	500,000
Improvement of Flood Forecasting System in India	Training of personnel in and installation of automatic recording instruments for flood forecasting.	368,000
Hydro-Mechanics Division of CWPC	Setting up a hydro-mechanics division in the Central Water and Power Commission to provide testing circuits for medium and large-sized special pumps ; serve as a Hydraulic Standards Laboratory ; and examine problems of sealing in pumps.	500,000
Applied Earth Sciences Division at the Central Water and Power Research Station, Poona	Strengthening of the various existing scientific divisions of the CWPRS for undertaking studies relating to engineering and explosion seismology, vibration technology, radio isotope techniques, glacio-hydrology and engineering geology.	500,000
Geo-Thermal Investigations	Conduct geological, geo-physical and geochemical surveys in certain selected thermal areas with a view to locating sites for generation of geo-thermal energy.	969,000
Load Despatch Training Institute	Equipping the Institute with special equipment which would stimulate the transmission of electric power on actual networks and facilitate examination of problems connected with power system studies.	460,000
D. TRANSPORT AND COMMUNICATIONS		
Advanced Tele-communication Training Centre at Ghaziabad	Assist in the establishment of a telecommunication training centre to train engineers, senior supervisors and management personnel of the telecommunication services as well as provide in-service training courses for technical personnel.	1,305,000
Television Programme Research and Prototype production Centre	Set up a central television 16 mm film production-cum-research unit at Poona.	550,000
Cyclone Warning Research Organisation	Set up an institute at Madras to coordinate service and research in forecasting tropical cyclones.	605,000
Central Institute of Road Transport, Poona	Provide advisory services for training in general management, traffic management, maintenance management, personnel management as well as fellowships for training abroad. Also develop a Testing and Research Laboratory at the CIRT.	200,000
Gulmarg Winter Sports	Develop a winter sports resort at Gulmarg as a prototype for the development of similar resorts in the Himalayas. Provide adviser on the development of winter sports, fellowships for training of Indian nationals abroad and supply winter sports equipment.	430,000
Institute of Tourism	Assist in the development of an Institute of Tourism to provide training facilities to personnel of the tourist industry.	270,000

<i>Title of Project</i>	<i>Objective</i>	<i>Estimated UNDP Contribution (in US Dollars)</i>
E. INDUSTRY & MINERALS		
Oil and Natural Gas Commission	Installation of a satellite navigation system in the seismic vessel to be acquired by the ONGC, provide advisory services and train technicians overseas in the operation and maintenance of this system.	3,011,300
Production of Sponge Iron	To establish at Kothagudem in Andhra Pradesh a demonstration sponge iron plant with a capacity of 100 tons daily.	1,534,000
Engineers India Ltd., New Delhi (EIL)	Provide technical advisory services, fellowships and equipment to the EIL with a view to enhancing its capabilities in engineering design, procurement, construction and commissioning of petroleum refineries overseas, petrochemical and fertilizer plants in India.	690,000
Indian Oil Corporation (IOC)	Provide expert services for refining and marketing products in specialized areas and also provide fellowships for training abroad of IOC scientific personnel.	840,000
Indian Petrochemicals Corporation Ltd. (ICPL)	Assist the ICPL in expanding its training programme for petrochemical engineers by making available expert services and also in-plant training of these engineers in petrochemical plants overseas.	400,000
Establishment of an Aluminium Institute	Assist by providing expert services, fellowships and equipment for the setting up of an Aluminium Institute.	930,000
Modernisation of Small Industries Service Institutes	Assist the Small Industries Institutes in their efforts to (1) modernize workshops attached to the institutes, and (2) obtain mobile testing vans which would enable products to be tested at factory site and facilitate better quality control.	500,000
Numerical Control Centre	Assist in the establishment of a Numerical Control Centre for research and development of design and help in the manufacture of numerically controlled machine tools and numerical control systems in India.	1,500,000
Welding Research Institute	Provide technical expertise, equipment and training abroad of Indian nationals in connection with the establishment of a Welding Research Institute.	1,000,000
Automobile Ancillary Testing Centre	Provide testing equipment to the proposed centre to undertake testing of ancillaries produced by small and medium scale industries.	500,000
Newsprint and Paper	Provide expertise, fellowships, equipment, including pilot plant for production of newsprint and paper and also set up facilities for testing of commercial scale production of chemi-mechanical pulp for some important species for newsprint manufacture.	1,000,000
F. LABOUR WELFARE AND CRAFTSMANSHIP		
Setting up of Apex Vocational Training Centres	Provide equipment to Apex Centres in the existing Central Training Institutes for Instructors for basic training in selected trades such as chemical, textile, printing, farm mechanics, master cutters and women's occupations.	530,000
Vocational Training Centres	Provide equipment to Satellite Centres to be attached to Model Training Institutes for training in different trades.	720,000

<i>Title of Project</i>	<i>Objective</i>	<i>Estimated UNDP Contribution (in US Dollars)</i>
National Labour Institute	Assist in the establishment of the National Labour Institute by providing equipment for lecture halls, library publications, research work and for the auditorium. Also provide for training abroad of officers of the Institute.	250,000
G. FOREIGN TRADE		
Product Adaptation for Export	Assist the Trade Development Authority by providing expert advice, fellowships and equipment for competitive marketing of India's "non-traditional" industrial manufactures and also for expanding exports of refractory ores like kyanite, sillenite, chromite and other commodities like granite and marbles.	987,000
Research and Surveys for Export Development	Assist the Indian Institute of Foreign Trade in undertaking intensive market research studies and surveys in areas like product improvement, adaptation, strengthening of production base, policies and procedures and trade barriers.	336,000
Industrial Information Centre	Assist the Trade Development Authority to set up an Information System and Industrial Information Centre by providing cinematographic and audio-visual equipment, expert services and assistance in organizing a network of, and providing technical assistance to foreign correspondents and agents.	300,000
H. EDUCATION		
Specialized Research Laboratories at regional level	Assist in the development of specialized industrial research laboratories at four regional engineering colleges for research activities connected with problems of industry, so as to promote simultaneously a continuing faculty development as well as the training of industry-oriented research workers.	425,000
Institute of Industrial Design	Assist the Institute of Industrial Design with expert services, fellowships and equipment for the training of expert designers for the consumer industry with accent on aesthetic and utilitarian aspects of consumer goods for both domestic and export markets.	125,000
I. HOUSING AND URBAN DEVELOPMENT		
Hindustan Housing Factory, New Delhi	Assist the existing factory in Delhi in streamlining and mechanizing the existing methods of production; setting up a Design Office, and drawing up plans for factory locations away from Delhi. Assistance will be by way of expert advisory services, fellowships and equipment.	343,000
Prefabrication Housing Factory, Bombay	Assist in setting up the pilot unit to try out certain equipment and processes to assess their suitability for prefabrication before large-scale production is attempted at the Prefabrication Factory to be set up in Bombay.	
J. RURAL WATER SUPPLY		
Plan for rural water supply	Provide expert services, fellowships and 25-30 sophisticated and heavier high speed rock-drilling units with accessories for a comprehensive plan for rural water supply covering 15,000 villages having a population of 10 million.	2,826,000

<i>Title of Project</i>	<i>Objective</i>	<i>Estimated UNDP Contribution (in US Dollars)</i>
K. COMPUTER-BASED PROJECTS		
Tata Institute of Fundamental Research (TIFR), Bombay	Provide a large computer system to meet the needs of TIFR in handling a variety of engineering and scientific applications.	3,252,000
Jawaharlal Nehru University (JNU), New Delhi	Provide a large computer system to enable JNU to undertake inter-disciplinary studies of significance to national development.	3,250,000
National Aeronautical Laboratory (NAL), Bangalore	Provide a large computer system to NAL, Bangalore, to meet the requirements of research-based industries in the region.	2,620,000
L. EMERGING TECHNOLOGY		
Development of techniques in the cladding of materials using hydrostatic extrusion.	Assist the National Physical Laboratory, New Delhi, with expert advisory services, equipment and fellowships in connection with the development of technologies for cladding aluminium with copper, extrusion of hard materials such as high strength aluminium alloys and alloy steels.	1,014,000

UNITED NATIONS AGENCIES IN NEW DELHI

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Food and Agriculture Organization (FAO)
United Nations Fund for Population Activities (UNFPA)
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World Food Programme (WFP)
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Tel : 630948, 631078, 630169, 630875

Office of the United Nations High Commissioner for
Refugees
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Tel : 631225

International Labour Organization (ILO)
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Tel : 372101-2-3 & 372125

United Nations Educational, Scientific and
Cultural Organization (UNESCO)
UNESCO House, 40-B Lodi Estate, New Delhi-110003
Tel : 618092-3 and 618223

United Nations Children's Fund (UNICEF)
UNICEF House, 11 Jorbagh, New Delhi-110003
Tel : 618371-75 and 618150-52

World Health Organization (WHO)
World Health House, Indraprastha Estate, New Delhi-110001
Tel : 270181

International Bank for Reconstruction and
Development (World Bank)
53 Lodi Estate, New Delhi-110003
Tel : 617241-2-3-4

United Nations Military Observer Group
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Technical Cooperation Programmes for India carried out by the following agencies are handled by the United Nations Development Programme in India

International Atomic Energy Agency (IAEA)
International Civil Aviation Organization (ICAO)
Universal Postal Union (UPU)
International Telecommunication Union (ITU)

World Meteorological Organization (WMO)
Inter-Governmental Maritime Consultative Organization (IMCO)
United Nations Industrial Development Organization (UNIDO)
United Nations Conference on Trade and Development (UNCTAD)